55-1520-248-23-3/990

TM 55-1520-248-23-3

DRIVE TRAIN SYSTEM	6
HYDRAULIC SYSTEM	7
INSTRUMENT SYSTEM	8

TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL

ARMY MODEL OH-58D HELICOPTER

This copy is a reprint which includes current pages from Change – 1.

This manual together with TM 55-1520-248-23-1, 12 January 1988, TM 55-1520-248-23-2, 12 January 1988, TM 55-1520-248-23-4, 12 January 1988, TM 55-1520-248-23-5, 12 January 1988, TM 55-1520-248-23-6, 12 January 1988, TM 55-1520-248-23-7, 12 January 1988, TM 55-1520-248-23-8, 12 January 1988, supersedes TM 55-1520-248-23-1, 3 November 1986, TM 55-1520-248-23-2, 3 November 1986, TM 55-1520-248-23-3, 3 November 1986, TM 55-1520-248-23-4, 3 November 1986, TM 55-1520-248-23-5, 3 November 1986.

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HEADQUARTERS, DEPARTMENT OF THE ARMY
12 JANUARY 1988

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D 101. 11:

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 17 November 1988

Aviation Unit and Intermediate Maintenance Manual
ARMY MODEL OH-58D HELICOPTER

TM 55-1520-248-23-3, 12 January 1988, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Remove pages
i and ii	i and ii
6-169 and 6-170	6-169 and 6-170
6-175 through 6-178	6-175 through 6-178
6-187 and 6-188	6-187 and 6-188
6-205 and 6-206	6-205 and 6-206
6-215 and 6-216	6-215 and 6-216
Index-17 and Index-18	Index-17 and Index-18
- - -	Index-18.1/Index-18.2
Index-23 and Index-24	Index-23 and Index-24
Index-39 and Index-40	Index-39 and Index-40
Index-49 and Index-50	Index-49 and Index-50

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, AVUM and AVIM Maintenance requirements for OH-58D Helicopter, Observation.

WARNINGS, CAUTIONS, AND NOTES

Personnel performing troubleshooting procedures and practices which are included or implied in this technical manual shall observe the following warnings.

WARNING

An operating procedure, practice, etc., which if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operating procedure, practice, etc., which if not strictly observed, could result in damage to or destruction of equipment.

NOTE

An operating procedure, condition, etc. which it is essential to highlight.

SAFETY STEPS
ELECTRICAL SHOCK

Refer to FM 21-11 for electrical shock safety steps and procedures.

WARNING
HIGH VOLTAGE

The helicopter contains high voltage and shall be electrically grounded when parked. Serious burns and electrical shock can result from contact with exposed electrical wires or connectors.

WARNING
HIGH VOLTAGE

High voltage may be stored in the ignition system after operation of the APU. This high voltage can cause injury or death.

- Do not make contact with exposed wires or connectors.
- Allow at least five minutes after operation of the ignition system before disconnecting or removing ignition system components.
- Turn all power switches off before making any connections or disconnections.
- Observe instructions for grounding the power cable to discharge high voltage.
- For artificial respiration, refer to FM 21-11.

WARNING

PITOT HEAT

The pitot tube assembly is very hot during and immediately after operation requiring pitot heat. Severe burns will result if contacted by hands or other parts of the body.

WARNING

LUBRICATING OILS HAZARDOUS

Lubricating oils MIL-L-7808 and MIL-L-23699 contain materials hazardous to health. They can cause paralysis if swallowed. Prolonged contact with skin can cause irritation. Fire can result if exposed to heat or flames.

- Use only in areas with adequate ventilation.
- Wash hands thoroughly after handling.

WARNING

BATTERY ELECTROLYTE

Corrosive battery electrolyte (potassium hydroxide) requires rubber gloves, apron, and face shield when handling leaking batteries. Potassium hydroxide spilled on clothing or other material shall be washed immediately with clean water. If spilled on personnel, severe skin burns will result. Immediately start flushing the affected area with clean water and continue flushing until medical assistance arrives.

WARNING

RADIATION HAZARD

SELF-LUMINOUS DIALS

Self-luminous instrument dials contain radioactive materials.

- If glass is broken or case becomes unsealed, avoid personal contact. Injury to personnel could result.
- Forceps or gloves made of rubber or polyethylene shall be used to pick up contaminated material.

SELF-LUMINOUS DIALS (CONT)

- Place material and gloves in a plastic bag. Seal bag and dispose of it as radioactive waste in accordance with AR 755-15 and TM 3-261.
- Repair procedure shall conform to requirements in AR 700-52.

WARNING

POISONOUS LEAD OXIDE

Poisonous lead oxide is a byproduct of fuels containing tetraethyl lead. Death or injury can result if this lead oxide is taken into the body through cuts or other external openings, or if inhaled.

- Wear rubber gloves and goggles when handling contaminated parts.
- If accidental exposure occurs, drench affected areas with large amounts of clear water.
- Obtain immediate medical attention.

WARNING

TOXIC AND FLAMMABLE SOLVENTS

Solvents used for cleaning are toxic and flammable. They irritate skin and cause burns. Fire can result from use near heat or open flame.

- Use only in a well-ventilated area.
- Wear rubber gloves.
- In case of contact, immediately flush skin or eyes with water for at least 15 minutes.
- Get immediate medical attention for eyes.

DANGER
laser light

To look along the axis of a laser beam without protective glasses is extremely dangerous. Serious eye injury will result. Align the laser so that personnel are unlikely to inadvertently look along the axis of its beam.

Laser firing systems may store a charge. Take care to prevent accidental pulsing of the laser and to avoid electric shock. Personal injury may result.

Reflections from the laser beam are extremely dangerous. Serious eye injury will result. It is essential that all reflective material be removed from its path.

WARNING

SOLVENT

Drycleaning solvent is flammable and toxic. It can irritate skin and cause burns.

- Use only in well-ventilated area away from heat and open flame.
- Wear rubber gloves and goggles.
- In case of contact, immediately flush skin or eyes with water for at least 15 minutes.
- Get medical attention for eyes.

WARNING

SOUND LEVEL

Sound pressure levels in this helicopter during operating conditions exceed the Surgeon General hearing conservation criteria. Hearing protection devices, such as aviator helmet or ear plugs or ear sound suppressors are required to be worn by all personnel in and around the helicopter during its operation.

WARNING
COMPRESSED AIR

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.

- Use goggles to protect eyes and face.
- Do not exceed 30 psig.
- Do not direct airstream toward yourself or another person.

WARNING
TOXIC AND FLAMMABLE FUELS

Turbine fuels and fuel fumes are flammable. They cause drying and irritation of skin or eyes.

- Handle only in well – ventilated areas away from heat and open flame.
- Store in approved metal safety containers.
- Avoid prolonged or repeated contact with skin.
- Do not take internally.
- Wash contacted areas of skin after handling.
- Get immediate medical attention for eyes and irritated skin.

WARNING
METHYL – ETHYL – KETONE (MEK)

MEK is flammable and toxic.

- It can irritate and cause burns.
- Use only in well – ventilated areas, away from heat or open flame.
- Wear rubber gloves and goggles.
- In case of contact, immediately flush skin or eyes with water for at least 15 minutes.
- Get medical attention for eyes.

WARNING

STRAY VOLTAGE

Stray voltages may exist in electronic equipment installed in the helicopter. These voltages present an explosive hazard to fuel and fuel fumes. Severe injury or death could result.

WARNING

MAIN AND TAIL ROTOR BLADES

Stay clear of turning main and tail rotor blades. Wind gusts, coast down or cyclic movement may cause the main rotor blade to flap down below the height of a person. Dangerous winds are created by the main rotor blades when blades are operated at or near top rpm. Adequate distance must be maintained from main and tail rotor blades during operation. Severe injury or death may result.

WARNING

ARMAMENT

Loaded weapons, or weapons being loaded or unloaded, shall be pointed in a direction which offers the least exposure to personnel or property in the event of accidental firing. Personnel should remain clear of hazardous area of all loaded weapons.
Death or severe injury may result.

WARNING

HF ANTENNA

Ensure that HF antenna is not operating while performing maintenance. When operating, HF antenna emits infrared radiation that can cause radiation burns. If exposed to infrared radiation, seek medical aid immediately.

WARNING

ASBESTOS DUST

Avoid creating dust. Breathing asbestos dust may cause serious bodily harm.

AVIATION UNIT AND INTERMEDIATE
MAINTENANCE MANUAL

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, or the DA Form 2028-2 located in the back of this manual, directly to: Commander, US Aviation System Command, ATTN: AMSAV-MMD, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

TABLE OF CONTENTS

	TABLE OF CONTENTS	PAGE
	HOW TO USE THIS MANUAL	iv
CHAPTER 1	INTRODUCTION	
Section I	General Information	1-2
Section II	Equipment Description and Data	1-4
Section III	Principles of Operation	1-10
Section IV	Servicing	1-39
Section V	Lubrication	1-66
Section VI	Ground Handling, Jacking, Mooring, Hoisting, and Sling Loading	1-73
Section VII	Preventive Maintenance Inspection	1-133
Section VIII	Overhaul and Retirement Schedule	1-155
CHAPTER 2	AIRFRAME	
Section I	Fuselage	2-1
Section II	Tailboom	2-185
Section III	Pylon	2-280
CHAPTER 3	ALIGHTING GEAR	
Section I	Landing Gear	3-1
CHAPTER 4	POWER PLANT	
Section I	Power Plant	4-1
Section II	Air Induction	4-47
Section III	Exhaust System	4-63
Section IV	Engine Oil System	4-68
Section V	Ignition System	4-98.4
Section VI	Power Plant Controls	4-99
Section VII	Engine Mounts	4-135
Section VIII	Forward Firewall	4-177
CHAPTER 5	ROTORS	
Section I	Main Rotor Hub and Blade Assembly	5-1
Section II	Main Rotor Rotating Controls	5-158
Section III	Main Rotor Tracking and Dynamic Balancing	5-302
Section IV	Tail Rotor Hub and Blades	5-336
Section V	Tail Rotor Pitch Change Mechanism	5-407
Section VI	Tail Rotor Balancing	5-470

CHAPTER 6 DRIVE TRAIN SYSTEM

Section I Troubleshooting 6-1
Section II Engine to Transmission Driveshaft 6-19
Section III Transmission 6-28
Section IV Mast, Standpipe and Torquemeter 6-80
Section V Freewheeling Unit 6-167
Section VI Tail Rotor Driveshaft 6-218
Section VII Tail Rotor Gearbox 6-290
Section VIII Oil System 6-314

CHAPTER 7 HYDRAULIC SYSTEM

Section I Operational Check and Troubleshooting 7-1
Section II Hydraulic System Bleeding 7-11
Section III Hydraulic Filter Assemblies 7-14
Section IV Hydraulic Hoses, Lines, Fittings and Quick-Disconnects 7-22
Section V Pressure Switch, Manifolds and Relief Valve 7-34
Section VI Hydraulic Solenoid Valve 7-46
Section VII Hydraulic Reservoir 7-57
Section VIII Hydraulic Pump 7-73
Section IX Actuators 7-87

CHAPTER 8 INSTRUMENT SYSTEMS

Section I Engine, Rotor and Transmission Instruments 8-2
Section II Flight Instruments 8-37
Section III Pitot-Static Instrument and Air Data Systems 8-55
Section IV Navigation Instruments 8-87
Section V Miscellaneous Instruments 8-88

CHAPTER 9 ELECTRICAL SYSTEM

Section I Operational Checks-Electrical 9-1
Section II Troubleshooting-Electrical 9-179
Section III Direct Current Power Distribution System 9-180
Section IV Alternating Current Power and Distribution System 9-233
Section V Lighting System 9-265
Section VI Miscellaneous Equipment 9-296
Section VII Power Plant and Transmission Electrical Equipment 9-453
Section VIII Avionic Cooling System 9-475

CHAPTER 10 FUEL SYSTEM

Section I Fuel System 10-1
Section II Fuel Cells 10-57

CHAPTER 11 FLIGHT CONTROL

Section I Flight Controls Troubleshooting 11-1
Section II Rigging 11-2
Section III Collective Controls 11-31
Section IV Cyclic Control System 11-182
Section V Directional Controls 11-392
Section VI Component Inspection 11-486

CHAPTER 12 UTILITY SYSTEM (Not Applicable) 12-1

CHAPTER 13 ENVIRONMENTAL CONTROL SYSTEM

Section I Heat Mixing Valve 13-1
Section II Ventilating System 13-30

CHAPTER 14 HOIST AND WINCHES (Not Applicable) 14-1

CHAPTER 15 AUXILIARY POWER PLANT (Not Applicable) 15-1

CHAPTER 16 MISSION EQUIPMENT (Not Applicable) 16-1

CHAPTER 17 EMERGENCY EQUIPMENT

Section I Fire Extinguisher and First Aid Kit 17-1

CHAPTER 18 INSTALLED AVIONICS EQUIPMENT (Not Applicable) 18-1

APPENDIX A REFERENCES A-1

APPENDIX B MAINTENANCE ALLOCATION CHART (MAC) B-1

APPENDIX C HELICOPTER INVENTORY MASTER GUIDE C-1

APPENDIX D EXPENDABLE SUPPLIES AND MATERIALS LIST D-1

APPENDIX E STORAGE OF HELICOPTER E-1

APPENDIX F WIRING DIAGRAMS F-1

APPENDIX G WEIGHT AND BALANCE G-1

APPENDIX H ILLUSTRATED LIST OF MANUFACTURED ITEMS (AVUM) (AVIM) H-1

APPENDIX J FAULT DETECTION LOCATION SYSTEM (FDLS) FAILURE CODES J-1

APPENDIX K MAINTENANCE ACTION PRECISE SYMPTOM K-1

Section I Drive Train System (Chapter 6) K-1
Section II Hydraulic System (Chapter 7) K-17
Section III Instrument Systems (Chapter 8) K-22
Section IV Electrical System (Chapter 9) K-57
Section V Fuel System (Chapter 10) K-742
Section VI Flight Controls (Chapter 11) K-747

GLOSSARY .... Glossary 1

INDEX ALPHABETICAL .... Index 1

FOLDOUTS FO-1

HOW TO USE THIS MANUAL

1. GENERAL.

In order to do the job right, you must be able to find the information you need. Knowing how to use this manual is very important. You should know what the manual consists of, how it is put together, and how to use it.

2. ORGANIZATION.

a. The entire manual is made up of a set of CHAPTERS. They are numbered in Arabic numerals (1, 2, 3, 4, etc.).

b. Each chapter contains information on major helicopter systems.

c. Chapters are divided into SECTIONS. Sections are numbered in Roman numerals (I, II, III, IV, etc.).

d. Each section has information you need for doing any job.

e. Sections have PARAGRAPHS. These cover only one task at a time.

3. PARAGRAPHS.

a. Paragraphs are individually numbered by chapter and sequence. Illustrations are provided to make things clearer. Illustrations and index callouts apply to the text located on the same page as the illustration.

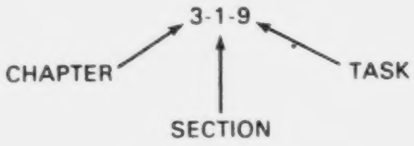
b. Paragraph numbers are assigned to each major information subject.

c. The task title (task name) is also at the top of the page.

4. NUMBERING.

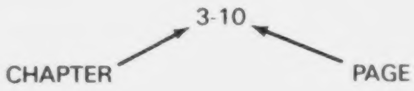
a. Paragraphs are numbered in two parts. The first number is the CHAPTER. The second number is the PARAGRAPH number in that section. Each number is separated by a dash.

b. Tasks are numbered in three parts. The first number is the CHAPTER. The second number is the SECTION, and the third is the TASK number in that section. Each number is separated by a dash as shown in the example.



5. PAGE NUMBERING.

All page numbering is by chapters. Section numerals are not included in page numbers. The first number is the number of the chapter; the second number is the number of the page in that chapter. The numbers are separated by a dash as shown in the example.



6. ALPHABETICAL INDEX.

a. The Alphabetical Index lists all the subjects of the manual in alphabetical order. If you know what you are looking for, it will be listed under the first letter of the first word in the title. For example: If you need information on the Tail Rotor Gearbox, look under "T", "R", or "G" in the Index.

b. The Alphabetical Index gives you the paragraph or task number that has the information you need.

7. APPENDIXES.

a. Appendixes A through J are included in this manual to provide supplementary information required for maintenance. Each appendix contains specific instructions for its use.

b. Section III of Appendix B — Maintenance Allocation Chart — contains a list of the special tools and ground support equipment required for the OH-58D helicopter. The TOOL OR TEST EQUIPMENT REFERENCE CODE COLUMN has a number for each item on the list. This number appears as (B124) for example in identifying the particular tool or GSE in the setup table of the applicable task. Also, this number appears where applicable in Section II or Appendix B.

c. Appendix D — Expendable Supplies and Materials — contains a list of the adhesives, chemicals, etc., required to maintain the helicopter. The TEM NUMBER column has a number for each item on the list. This number appears as (D4), for example, n identifying lockwire in the setup table of the applicable task. Also, this number appears as (D4) within he steps of the task.

8 GLOSSARY.

a. Many words have more than one meaning. A word that has a certain meaning in every day language may have a different meaning when used for the helicopter. This is the reason for the Glossary. If you see a word in the manual and you are not sure of the meaning, check the Glossary.

b. The Glossary also has a List of Abbreviations as they are used in this manual. It is always good practice to look over the list. Make sure you know what each abbreviation stands for.

9 INITIAL SETUP (EXAMPLE NEXT PAGE)

The first page of each maintenance procedure in the manual is the Initial Setup. Always check the Initial Setup before starting a task on the helicopter. The Initial Setup contains information you must know. DON'T START A TASK UNTIL:

a. You understand the task.

b. You understand what you are to do.

c. You know what is needed to do the work.

d. You have the things you need.

5-X-XX. REMOVE/INSTALL MAIN ROTOR CONTROLS BOOT

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench, 30-150 Inch-Pounds
Maintenance Platform

Parts:

Cotter Pins (2)
Nuts

Materials:

Wiping Rags (D53)
Methyl-Ehtyl-Ketone (MEK) (D6)
Corrosion Preventive Compound (D16)
Abrasive Pads (D24)
Lockwire (D5)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-TMF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-12)
Air Induction Cowling Removed (Task 4-2-1)
Main Rotor Hub and Blades Removed (Task 5-1-1)

General Safety Instructions:

WARNING

Ensure that no one operates cyclic or collective controls from inside helicopter during replacement of boot. Physical Injury can occur. If injury occurs seek medical aid.

CHAPTER 6

DRIVE TRAIN SYSTEM

Section I	Troubleshooting	6-1
Section II	Engine to Transmission Driveshaft	6-19
Section III	Transmission	6-28
Section IV	Standpipe Electrical Assembly, Torquemeter System, and Main Rotor Mast Assembly	6-80
Section V	Freewheeling Unit	6-167
Section VI	Tail Rotor Driveshafts	6-218
Section VII	Tail Rotor Gearbox	6-290
Section VIII	Oil System	6-314

This chapter covers maintenance procedures for the OH-58D drive train system. The chapter is divided into eight sections, troubleshooting section I, engine to transmission driveshaft section II, main transmission section III, standpipe electrical assembly, torquemeter system and main rotor mast assembly section IV, freewheeling unit section V, tail rotor driveshaft section VI, tail rotor gearbox section VII and oil system section VIII.

Section I. TROUBLESHOOTING

This section includes procedures for operational checks for OH-58D drive train system. Troubleshooting maps are presented in logic tree format in Appendix K, Section I.

This troubleshooting includes main transmission, freewheeling unit, engine to transmission driveshaft, fan shaft assembly, oil system, tail rotor driveshaft, and tail rotor gearbox.

Following is a brief summary of drive train troubles which may be encountered in flight or while performing maintenance. Conditions and possible causes listed have been limited to those reasonably probable (though not necessarily frequent in normal service). These could be subject to some evaluation at this level, although final corrective action by a higher level might be required in some instances. Conditions involving obvious major damage are omitted. Problems caused by accident or an unusual chain of events which would require information in addition to that available in troubleshooting are omitted.

1. In main transmission troubleshooting, observe the following:

a. Low oil level will not cause a low oil pressure indication, provided sump contains enough oil to cover pump inlet. Oil temperature might rise, however. Overfilling, above standard oil level, may cause low pressure indication due to foaming of the oil caused by excessive churning by the gears.

b. Effects of an oil leak will depend on its location in system and rate of leakage. An external leak can eventually allow sump to be pumped dry, causing failure of main transmission. While oil remains to supply pump, the pressure regulator valve would tend to maintain normal system pressures, compensating for leakage. This applies especially to leaks located between pump and pressure regulator valve. Leaks occurring beyond pressure regulator valve could cause some indication of low oil pressure. Leakage to interior of main transmission, while not affecting oil level, could starve lubrication areas beyond the leak. Indicated oil pressure and temperature might be affected.

c. Cumulative clogging of oil filter screens will not be shown by a gradual drop of indicated oil pressure as it may on some other aircraft oil systems. Pressure regulator valve would maintain normal pressure even if filter screens become so clogged as to force oil flow through filter bypass valve.

2. For engine to transmission driveshaft troubleshooting, apply the following:

a. Trouble conditions of engine to transmission driveshaft can seldom be detected in operation, since there are no reliable indications except possibly in an extreme condition. "Suspected vibration" is only partially accurate as a term for such conditions as dynamic out-of-balance or faulty coupling action. Vibration would result, as well as abnormal stresses and wear, but would be absorbed in structure and pylon mounts or effectively masked by normal vibrations of the helicopter, providing no distinct indication to the pilot.

b. Engine to transmission driveshaft trouble indications are, therefore, usually those revealed by careful inspection.

c. Principle cause of engine to transmission driveshaft trouble is faulty installation procedure.

3. For tail rotor driveshaft troubleshooting, apply same principles as for engine to transmission driveshaft.

NOTE

Before using troubleshooting chart in Appendix K, Section I, be sure all normal operational checks have been performed. If a malfunction which is not listed in this chart is found, notify the next higher level of maintenance.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Serviceability Check of Main Transmission	6-1-1	6-3
Serviceability Check of Freewheeling Unit	6-1-2	6-8
Serviceability Check of Tail Rotor Gearbox	6-1-3	6-13
Identification of Foreign Material in Drive Train System	6-1-4	6-16

6-1-1 SERVICEABILITY CHECK OF MAIN TRANSMISSION

This task covers: Serviceability Check (On Helicopter)

INITIAL SETUP

Applicable Configurations

All

Tools:

Powertrain Repairer Tool Kit
Oil Container

Materials:

Wiping Rags (D53)
Oil (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

NOTE

Lubricating oil is to be drained into a clean container and saved for inspection.

Lubricating oil drained (Task 1-4-6).

Lubricating oil inspected for metal particles (Task 6-1-4).

Any metal particles found identified (Task 6-1-4).

Corrective action performed (Table 6-1-1).

Electrical magnetic element of upper chip detector removed (Task 6-3-8).

Electrical magnetic element of lower chip detector removed (Task 6-3-11).

General Safety Instructions:

CAUTION

MIL-L-7808 and MIL-L-23699 oils (D2 and D3) should not be mixed except in an emergency. If oils are mixed, drain oil and service with proper oil within five operating hours.

GO TO NEXT PAGE

6-1-1. SERVICEABILITY CHECK OF MAIN TRANSMISSION (CONT)

1. Inspect electrical magnetic element of upper chip detector (1) for metal particles.

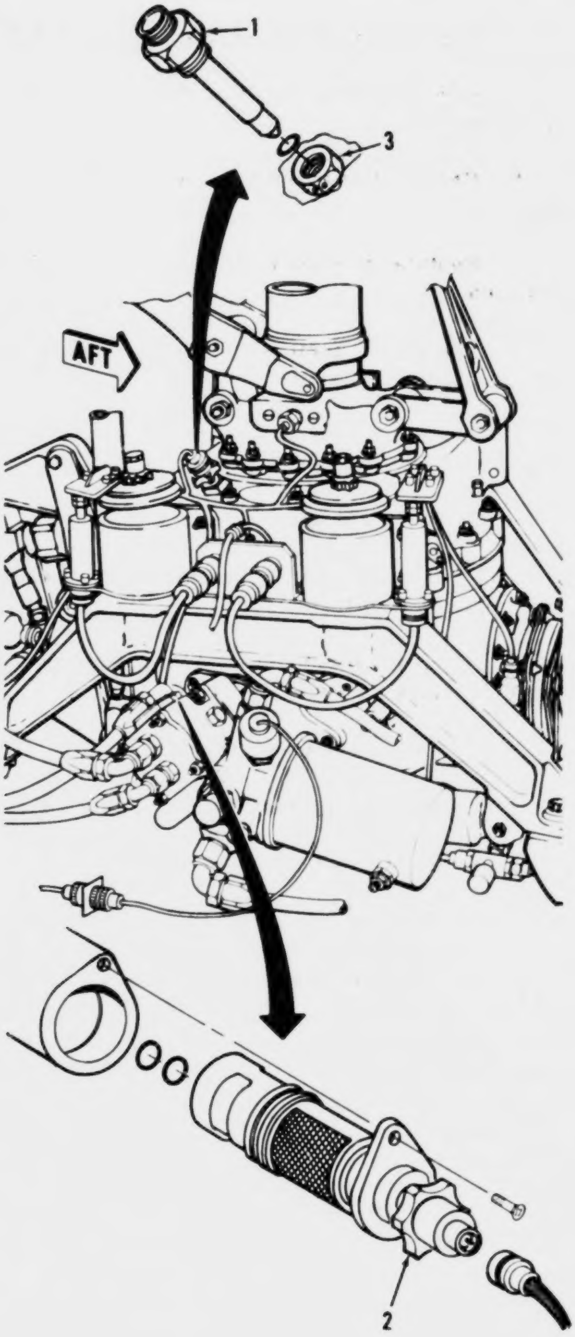
2. Inspect electrical magnetic element of lower chip detector (2) for metal particles.

3. Use wiping rags (D53) to clean self-closing valves (3).

4. Inspect self-closing valves (3) for damage.

5. Install electrical magnetic element of upper chip detector (1) (Task 6-3-8).

6. Install electrical magnetic element of lower chip detector (2) (Task 6-3-11).



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6-1-1. SERVICEABILITY CHECK OF MAIN TRANSMISSION (CONT)

7. Remove oil filter elements (4 and 5) (Task 6-8-3).

a. Inspect oil filter elements (4 and 5) for physical damage.

b. Replace primary oil filter element (4) if damaged.

c. Replace secondary oil filter element (5) if damaged.

d. Inspect oil filter elements (4 and 5) for entrapped foreign material.

e. If only minor contamination of filter elements (4 and 5) is found, do the following:

(1) Replace primary oil filter (4).

(2) Remove clean, and install secondary oil filter (5) (Task 6-8-3).

f. If gross contamination of filter elements (4 and 5) is found, do the following:

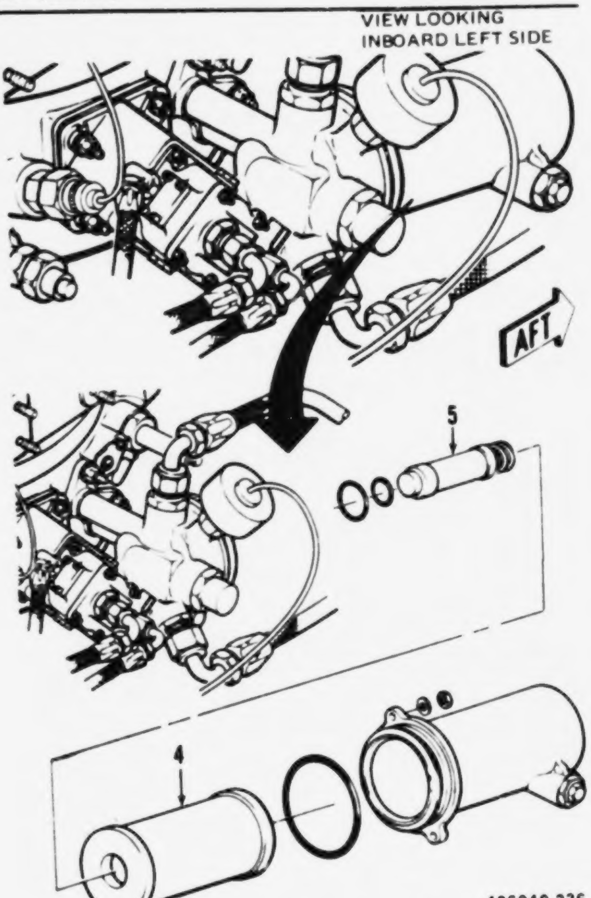
(1) Remove oil cooler (6) (Task 6-8-22).

(2) Identify oil cooler (6) as contaminated.

(3) Build up oil cooler (6) (Task 6-8-23).

(4) Thoroughly flush all oil system lines.

(5) Install oil cooler (6) (Task 6-8-24).



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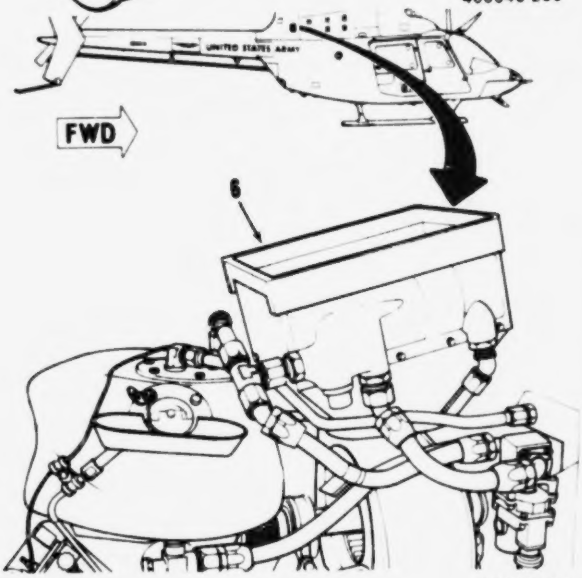

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6-1-1. SERVICEABILITY CHECK OF MAIN TRANSMISSION (CONT)

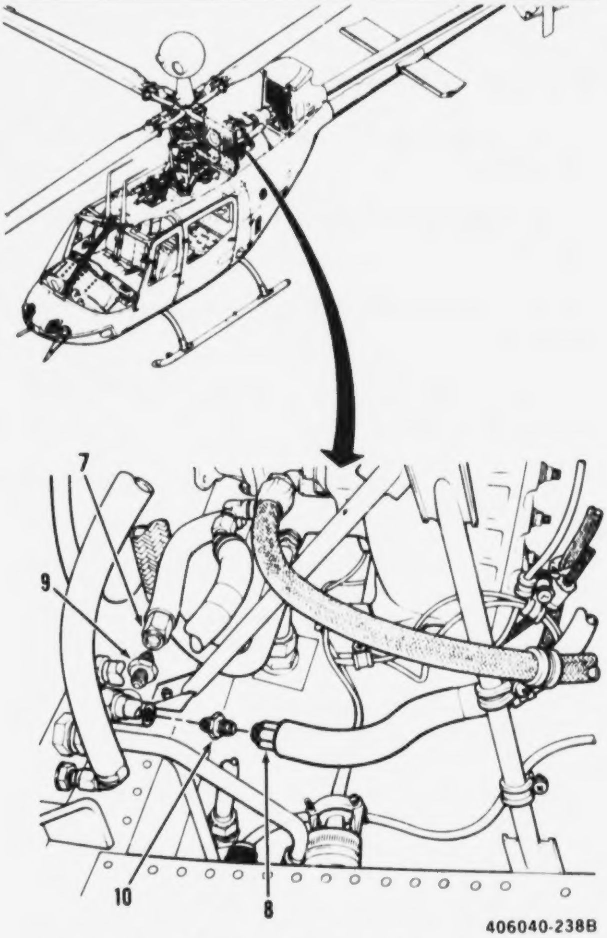
(6) Disconnect hose assemblies (7 and 8). Remove, clean, inspect, and install freewheeling unit lubrication restrictors (9 and 10). Use wiping rags (D53) to clean restrictors (9 and 10). Connect hose assemblies (7 and 8).

(7) Remove, clean, inspect, and install oil jets (11 and 12) (Tasks 6-8-11 and 6-8-12).

g. Remove, clean, inspect, and install filter (13).

h. Service transmission oil system (Task 1-4-6).

i. Pilot perform ground run for one hour (TM 55-1520-248-MTF).



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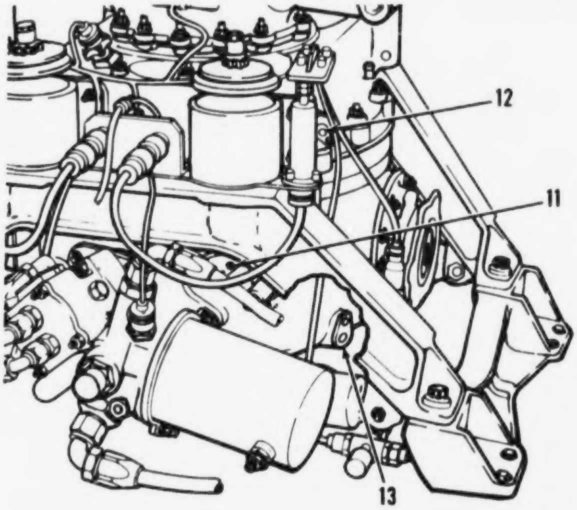

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6-1-1 SERVICEABILITY CHECK OF MAIN TRANSMISSION (CONT)

NOTE

Lubricating oil is to be drained into a clean container and saved for inspection.

j. Drain lubricating oil from transmission (Task 1-4-6).

k. Remove upper chip detector (1) (Task 6-3-8).

l. Inspect upper chip detector (1) for metal particles.

m. Remove lower chip detector (2) (Task 6-3-11).

n. Inspect lower chip detector (2) for metal particles.

o. Inspect lubricating oil for foreign material (Task 6-1-4).

p. If this serviceability check is being conducted because of metal particle contamination, and the number of metal particles has increased, or if any particles are found which are large enough to be identified as chips from a gear or bearing, replace main transmission. If the number of particles has decreased, and only minute particles are found, repeat serviceability check. If particles are found, send main transmission and freewheeling unit for overhaul.

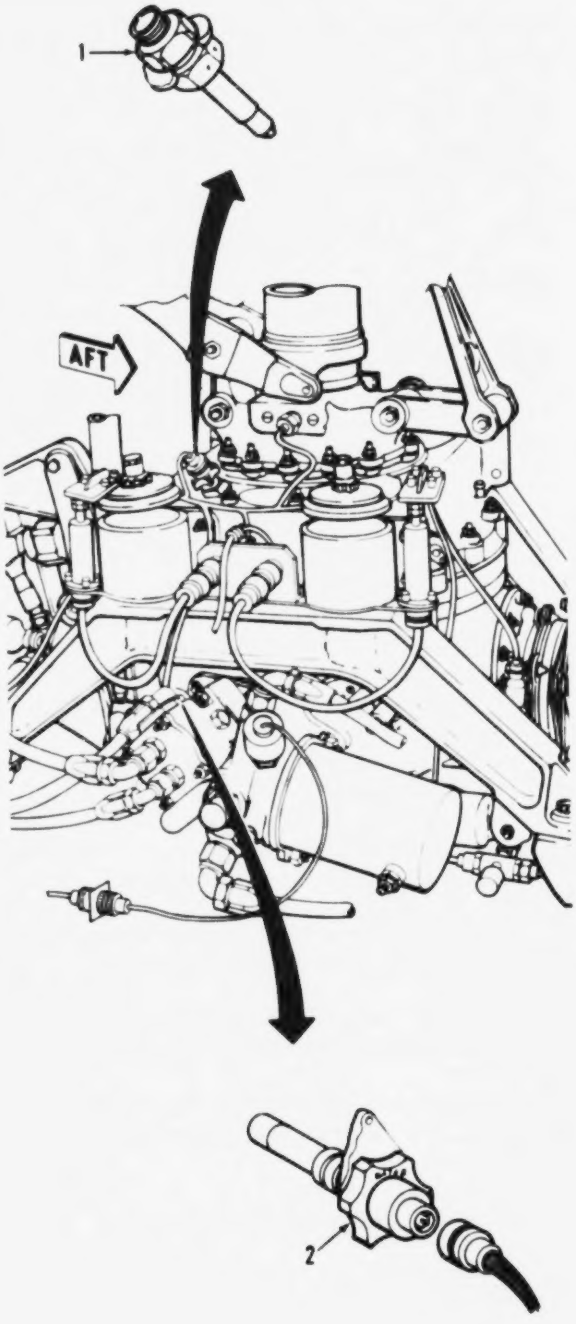
INSPECT

FOLLOW-ON MAINTENANCE

Install upper chip detector (Task 6-3-8).

Install lower chip detector (Task 6-3-11).

Service main transmission oil system (Task 1-4-6).



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END OF TASK

6-1-2. SERVICEABILITY CHECK OF FREEWHEELING UNIT

This task covers: Serviceability Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Drain Hose (B59)
Oil Container

Materials:

Oil (D2) or (D3) (See Table 1-2)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer
Pilot

References:

TM 55-1520-248-MTF

CAUTION

MIL-L-7808 and MIL-L-23699 oils (D2 and D3) should not be mixed except in an emergency. If oils are mixed, drain oil and service with proper oil within five operating hours.

1. Drain lubricating oil from freewheeling unit (1) and main transmission (Task 1-4-6).

a. Remove electrical connector (2) from electrical magnetic element of chip detector (3).

b. Remove electrical magnetic element of chip detector (3) from chip detector housing (4).

c. Insert drain hose (5) into chip detector housing (4) and drain oil into a clean container.

d. When oil is completely drained from freewheeling unit (1) and main transmission, remove drain hose (5).

2. Inspect lubricating oil for metal particles (Task 6-1-4).

3. If metal particles are found, identify (Task 6-1-4).

4. After metal particles are identified, take corrective action (Task 6-1-4).

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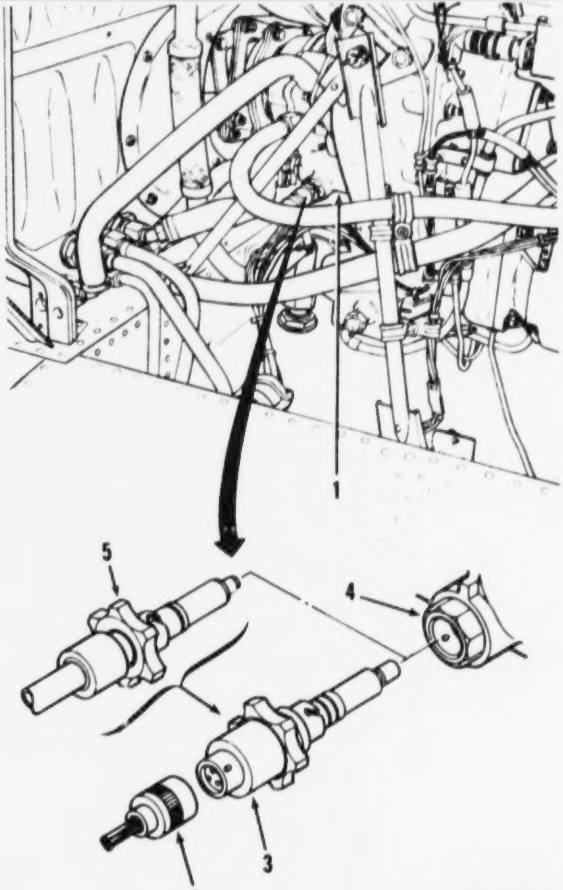

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CAUTION

> If foreign material is found in the freewheeling unit, inspect main transmission and mast bearing for contamination. Foreign material contamination in main transmission and/or mast bearing will cause serious damage.

5. Use wiping rags (D53) to clean self-closing valve in chip detector housing (4).

6. Inspect self-closing valve in chip detector housing (4) for damage.

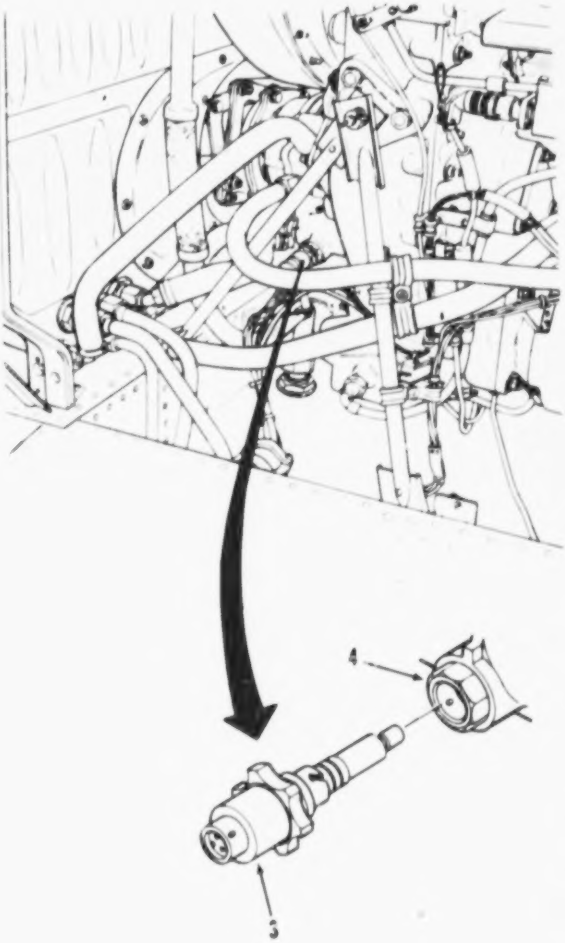
7. Inspect electrical magnetic element of chip detector (3) for metal particles.

8. If metal particles are found, identify (Task 6-1-5).

9. After metal particles are identified, take corrective action (Task 6-1-4).

10. Use wiping rags (D53) to clean electrical magnetic element of chip detector (3).

11. Install electrical magnetic element of chip detector (3) in chip detector housing (4).



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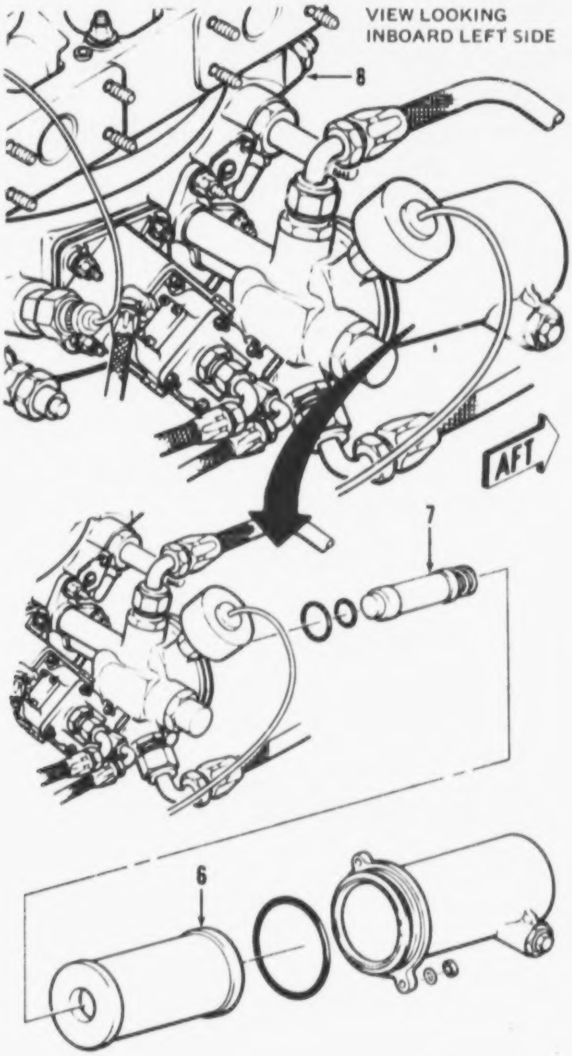
6-1-2. SERVICEABILITY CHECK OF FREEWHEELING UNIT (CONT)

12. Remove filter elements (6 and 7) from main transmission (8) (Task 6-8-3).

13. Inspect filter elements (6 and 7) for metal particles.

14. If metal particles are found, identify (Task 6-1-4).

15. After metal particles are identified, take corrective action (Task 6-1-4).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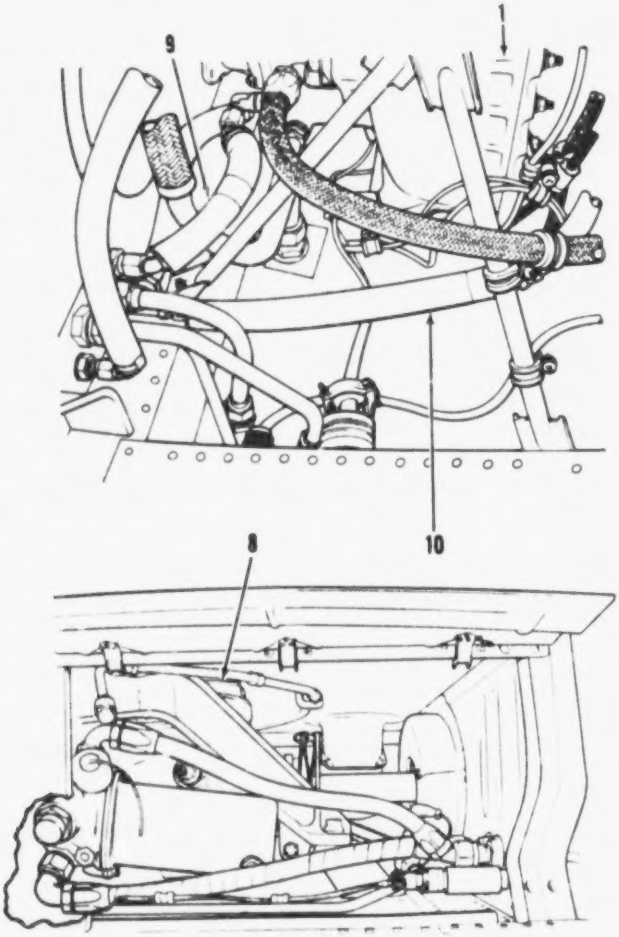
6-1-2 SERVICEABILITY CHECK OF FREEWHEELING UNIT (CONT)

16. Use clean lubricating oil (D2 and D3) to thoroughly flush hose assemblies (9 and 10). These hose assemblies are the return line from the freewheeling unit (1) to the main transmission (8).

17. Service transmission oil system (Task 1-4-6).

18. Pilot perform ground run for one hour (TM 55-1520-248-MTF).



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6-1-2. SERVICEABILITY CHECK OF FREEWHEELING UNIT (CONT)

19. Drain one quart of lubricating oil from freewheeling unit (1) as follows:

a. Remove electrical connector (2) from electrical magnetic element of chip detector (3).

b. Remove electrical magnetic element of chip detector (3) from chip detector housing (4).

c. Insert drain hose (5) into chip detector housing (4) and drain one quart of oil into a clean container.

d. Remove drain hose (5).

20. Inspect lubricating oil for metal particles (Task 6-1-4).

21. If metal particles are found, identify (Task 6-1-4).

22. After metal particles are identified, take corrective action (Task 6-1-4).

23. Inspect electrical magnetic element of chip detector (3) for metal particles.

24. If metal particles are found, identify (Task 6-1-4).

25. After metal particles are identified, take corrective action (Task 6-1-4).

26. If this serviceability check is being conducted because of metal particle contamination, and the number of metal particles has increased, or if any particles are found which are large enough to be identified as chips from a gear or bearing, replace freewheeling unit (1) (Tasks 6-5-1/7).

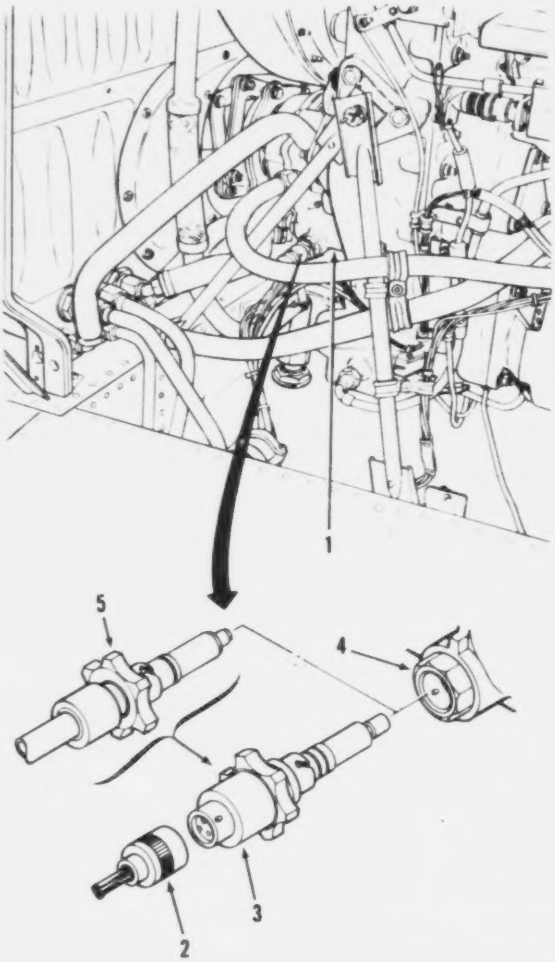
27. If the number of particles has decreased and only minute particles are found, do the following:

a. Install electrical magnetic element of chip detector (3) in chip detector housing (4).

b. Service transmission oil system (Task 1-4-6).

c. Release helicopter for continued operation.

END OF TASK



6-1-3. SERVICEABILITY CHECK OF TAIL ROTOR GEARBOX

This task covers: Serviceability Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Torque Wrench 150-750 Inch-Pounds

Materials:

Wiping Rags (D53)
Oil (D2) or (D3)
Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Lubricating Oil Drained (Task 1-4-7)
Lubricating Oil Inspection for Metal Particles (Task 6-1-4)
Identify Metal Particles if Found in Lubricating Oil (Task 6-1-4)
Corrective Action Performed (Table 6-1-1, Task 6-1-4)

GO TO NEXT PAGE

6-1-3. SERVICEABILITY CHECK OF TAIL ROTOR GEARBOX (CONT)

1. Remove chip detector (1) from gearbox (2).

INSPECT

2. Inspect chip detector (1) for metal particles (Task 6-1-4).

3. Inspect bevel gears for damage as follows:

a. Cut lockwire (D4) and remove sight glass (3) and packing. Discard packing.

b. Cut lockwire (D4) and remove inspection port plug (4) and packing. Discard packing.

c. Look through sight glass (3) port and inspection port. Visually inspect bevel gears for damage.

d. Whether bevel gears are or are not damaged, proceed as follows:

(1) Install sight glass (3) and new packing.

(2) Torque sight glass (3) **250-400 INCH-POUNDS**.

(3) Install lockwire (D4) for sight glass (3).

(4) Install inspection port plug (4) and new packing.

(5) Torque inspection port plug (4) **250-400 INCH-POUNDS**.

(6) Install lockwire (D4) for inspection port plug (4).

e. If bevel gears are damaged, replace tail rotor gearbox (2) (Task 6-7-1).

f. Send unserviceable tail rotor gearbox (2) to depot for overhaul.

CAUTION

MIL-L-7808 and MIL-L-23699 oils (D2 and D3) should not be mixed except in emergency. If oils are mixed, drain and service with proper oil within five operating hours.

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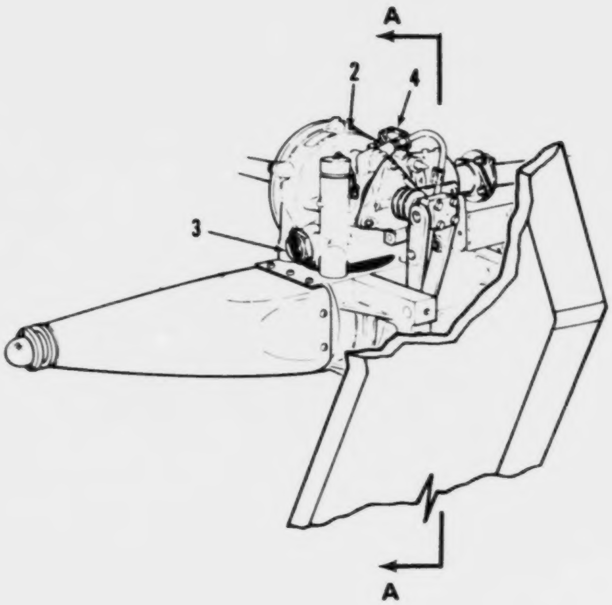

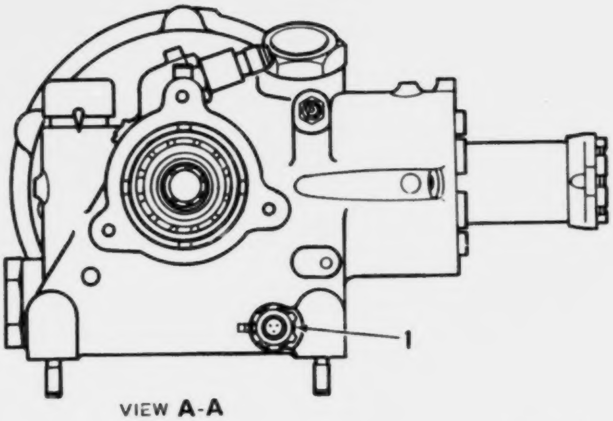

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406040-244

6-1-3 SERVICEABILITY CHECK OF TAIL ROTOR GEARBOX (CONT)

4. Flush gearbox (2) with clean lubricating oil (D2) or (D3). Use one quart minimum for flushing.

5. Clean with wiping rag (D53) and reinstall chip detector (1).

6. Remove filler cap (5) and service gearbox (2) to middle of sight glass (3) (Task 1-4-7).

7. Pilot perform ground run of helicopter for one hour (TM 55-1520-248-MTF).

8. Immediately after ground run, remove chip detector (1) and inspect for metal particles (Task 6-1-4).

INSPECT

NOTE

> If this inspection is being done because of metal particles and the number of metal particles has increased or if metal particles are found large enough to be identified as chips from a gear or bearing, replace the tail rotor gearbox (2). If the inspection shows a decrease and only small particles are found, the gearbox is operational.

9. Drain lubricating oil into a clean container (Task 1-4-7).

10. Inspect lubricating oil for metal particles (Task 6-1-5).

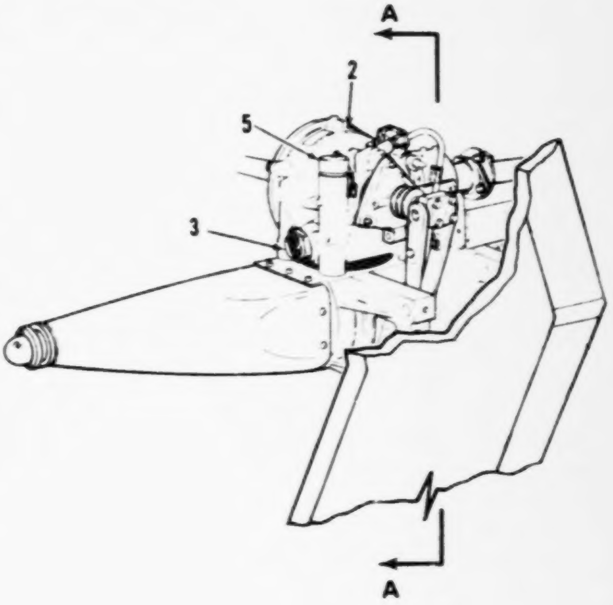
11. Clean with wiping rag (D53) and reinstall chip detector (1).

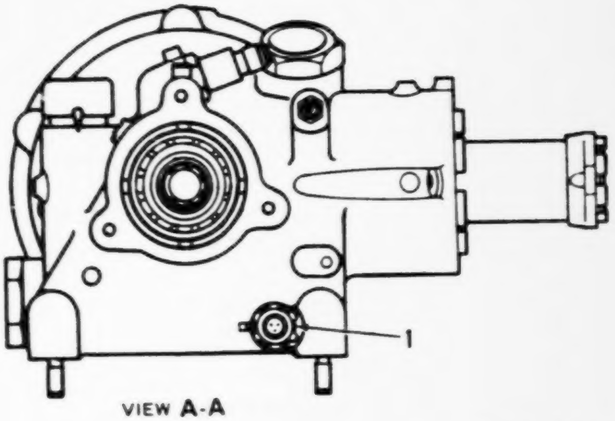
INSPECT

FOLLOW-ON MAINTENANCE

Service gearbox to middle of sight glass (Task 1-4-7).

END OF TASK





VIEW A-A

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6-1-4. IDENTIFICATION OF FOREIGN MATERIAL IN DRIVE TRAIN SYSTEM

This task covers: Identification of Foreign Material

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit

Materials:

Nitric Acid (D134)
Sodium Chloride (D135)
Hydrochloric Acid (D136)
Rubber Gloves (D119)
Test Tubes (D146) (5 required)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer

General Safety Instructions:

WARNING

Nitric acid (D134), sodium chloride (D135), and hydrochloric acid (D136) are corrosive and toxic. They can irritate skin and cause burns. Use only in well-ventilated area. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Perform visual inspection of foreign material particles found during serviceability checks or troubleshooting.

2. If foreign material particles cannot be recognized by color and hardness, perform tests outlined in steps 3 through 8.

3. Use magnetic retrieving tool to check particles. Magnet will attract ferrous particles only.

WARNING

Add acid to water, never water to acid. The latter may cause a violent chemical reaction.

GO TO NEXT PAGE

6-1-4. IDENTIFICATION OF FOREIGN MATERIAL IN DRIVE TRAIN SYSTEM (CONT)

4. Mix a small quantity of nitric acid solution (50 percent nitric acid (D134) and 50 percent water) in a test tube. Add a particle of material to be tested. If particle does not dissolve, warm solution slightly.

5. If particle dissolves, mix a small amount of sodium chloride solution (5 percent sodium chloride (D135) and 95 percent water) in a test tube. Add a few drops of sodium chloride solution to first test tube containing nitric acid solution. If particles form, particle being tested is silver.

6. Place a small amount of hydrochloric acid (D136) in a test tube and add a particle of material to be tested. If bubbles are released rapidly, or if particle disintegrates and a black residue forms, particle being tested is probably aluminum or magnesium.

7. Place a small amount of nitric acid (D134) in a test tube and add a second particle of same material. If there is no reaction with nitric acid, particle is probably aluminum.

8. Differentiate between copper, bronze, and magnesium as follows:

   a. Place a small amount of nitric acid (D134) in a test tube.

   b. Add a particle of material to be tested.

   c. If a bright green color is formed in nitric acid, particle is copper or bronze.

   d. If bubbles are released rapidly when particle is dropped in nitric acid, particle is probably magnesium.

NOTE

Phenolic and aluminum do not react noticeably in nitric acid.

9. Empty test tubes and rinse with generous amounts of water.

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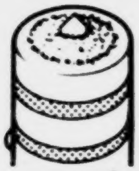
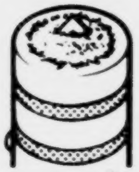
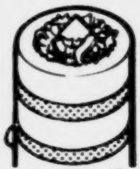
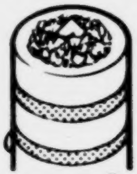
6-1-4. IDENTIFICATION OF FOREIGN MATERIAL IN DRIVE TRAIN SYSTEM (CONT)

Table 6-1-1. Identification of Foreign Materials


DETAIL A


DETAIL B


DETAIL C


DETAIL D

METAL PARTICLES CONTAMINATION — COMPONENT OIL

PARTICLE	QUANTITY AND/OR SIZE	ACTION REQUIRED	NOTES
Steel	Fuzz, fine hair-like particles. (See detail A.)	None	Result of normal wear. May have exaggerated appearance because of oil.
	Particles in splinter or granular form. (See details B and C.)	**Disassemble component, as required, to determine extent of damage. Replace component if necessary	Usually indicates failure.
	Thin flakes not exceeding 1/64 (0.015) inch in thickness and 1/16 (0.060) inch in length. Quantity not to exceed 10 flakes. (Refer to detail D.)	**Disassemble component as required, to determine extent of damage.	Small quantity may not indicate bearing failure.
	More than 10 flakes not exceeding 1/64 (0.015) inch in diameter and 1/16 (0.060) inch in length; and quantity of flakes exceeding the above dimensions.	**Disassemble component, as required to determine extent of damage. Replace component if necessary.	Usually indicates failure. May be pieces of bearings.
Aluminum or Magnesium	Particles in granular form, or like miniature lathe turnings.	**Disassemble component, as required to determine extent of damage.	May be result of use of these materials as mallets or drifts during assembly. May indicate wear of oil pump interior surfaces or abnormal interference.
Copper (Bronze)	Particles in granular form.	**Disassemble component, as required, to determine extent of damage. Replace component if necessary.	May indicate excessive wear of bearing cages as result of bearing failure.
Phenolic *Rubber		None	Results of the use of mallets and drifts during assembly or same as Copper (Bronze) above.

*From cut packing or gasket.
**Disassembly is an overhaul function.

406040-247

END OF TASK

Section II. ENGINE TO TRANSMISSION DRIVESHAFT

This section covers maintenance procedures for the engine to transmission driveshaft. These procedures include, inspection (on helicopter), removal, installation, cleaning, inspection (off helicopter), and repair.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Inspect Engine to Transmission Driveshaft	6-2-1	6-20
Remove/Install Engine to Transmission Driveshaft	6-2-2	6-21
Clean, Inspect, and Repair Engine to Transmission Driveshaft	6-2-3	6-26

6-2-1. INSPECT ENGINE TO TRANSMISSION DRIVESHAFT

This task covers: Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

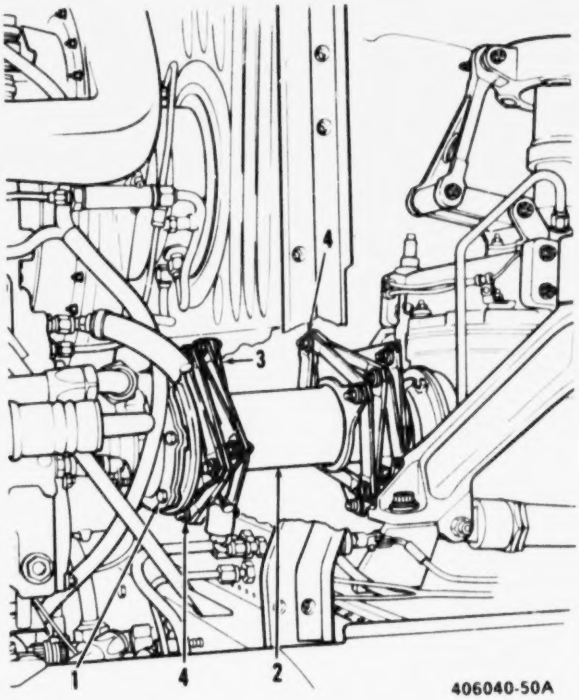
Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Air Induction Cowling Removed (Task 4-2-1)
Engine Cowling Removed (Task 2-1-24)

1. Inspect installation hardware (1) for security and damaged threads.

2. Inspect driveshaft (2) for scratches, nicks, dents, and corrosion. Refer to Task 6-2-3 for damage limits.

3. Inspect driveshaft flexframes (3) for cracks and for loose hardware (4).



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FOLLOW-ON MAINTENANCE

Install air induction cowling (Task 4-2-4).

Install forward fairing assembly (Task 2-1-21).

Install engine cowling (Task 2-1-24).

END OF TASK

6-2-2. REMOVE/INSTALL ENGINE TO TRANSMISSION DRIVESHAFT

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Tool Set — Driveshaft (B159)
Torque Wrench, 30-150 Inch-Pounds

Parts:

Nut, Steel, Self-Locking

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Engine Cowling Removed (Task 2-1-24)
Air Induction Cowling Removed (Task 4-2-1)

GO TO NEXT PAGE

6-2-2. REMOVE/INSTALL ENGINE TO TRANSMISSION DRIVESHAFT (CONT)

REMOVE

1. Remove two bolts (1) and two washers (2) from driveshaft cover assembly (3).

2. Remove 12 bolts (4) and 12 washers (5) from driveshaft cover assembly (3). Remove driveshaft cover assembly (3) from forward firewall (6).

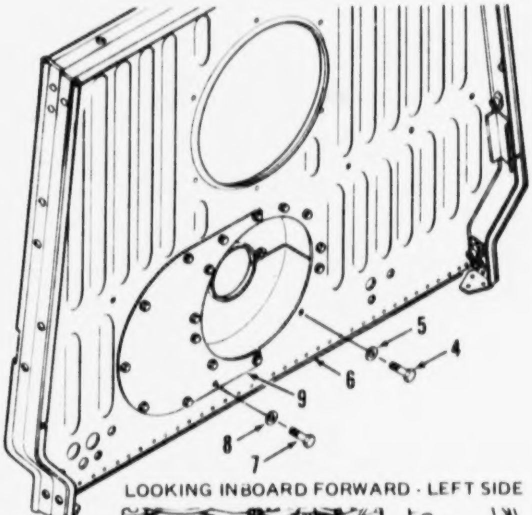
3. Remove six bolts (7) and washers (8) securing forward firewall closure plate (9) to forward firewall (6).

4. Remove six nuts (10), 12 washers (11), and six bolts (12) connecting aft fitting of driveshaft (13) to freewheeling unit adapter (14).

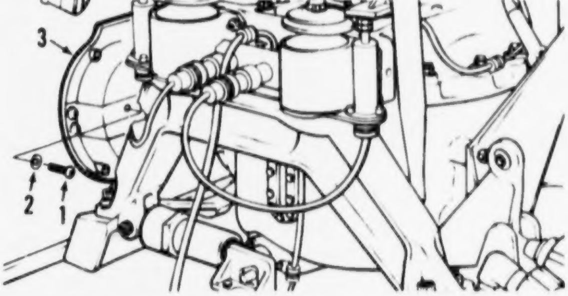
NOTE

> The transmission input adapter has a notch that can be used for removing bolts securing driveshaft forward fitting to transmission input quill adapter.

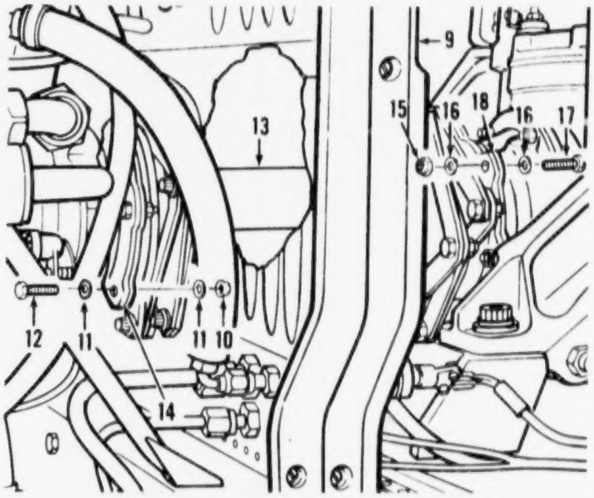
5. Remove six nuts (15), 12 washers (16), and six bolts (17) connecting forward fitting of driveshaft (13) to transmission input quill adapter (18).



LOOKING INBOARD FORWARD - LEFT SIDE



LOOKING INBOARD AFT, RIGHT SIDE



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6-2-2 REMOVE/INSTALL ENGINE TO TRANSMISSION DRIVESHAFT (CONT)

6. Assemble each half of tool set (B159) by connecting two bracket and cable assemblies (19) with turnbuckle (20).

7. Install each tool set half (21) by installing bracket (22) in groove of forward and aft fittings of driveshaft (13) and flexframe bolt (23).

NOTE

Engine to transmission driveshaft should be compressed to the extent necessary for removal.

8. Free driveshaft (13) from freewheeling unit adapter (14) and transmission input adapter (18) by turning turnbuckle (20) while holding hex nuts on tool set to compress driveshaft (13).

NOTE

If driveshaft does not detach from both adapters, reinstall 2 bolts and 2 nuts finger tight on each end of driveshaft. This will allow the driveshaft to be released from transmission adapter and freewheeling adapter.

9. Remove driveshaft (13) and place on suitable surface.

10. Remove driveshaft tool set halves (21) from driveshaft (13).

INSTALL

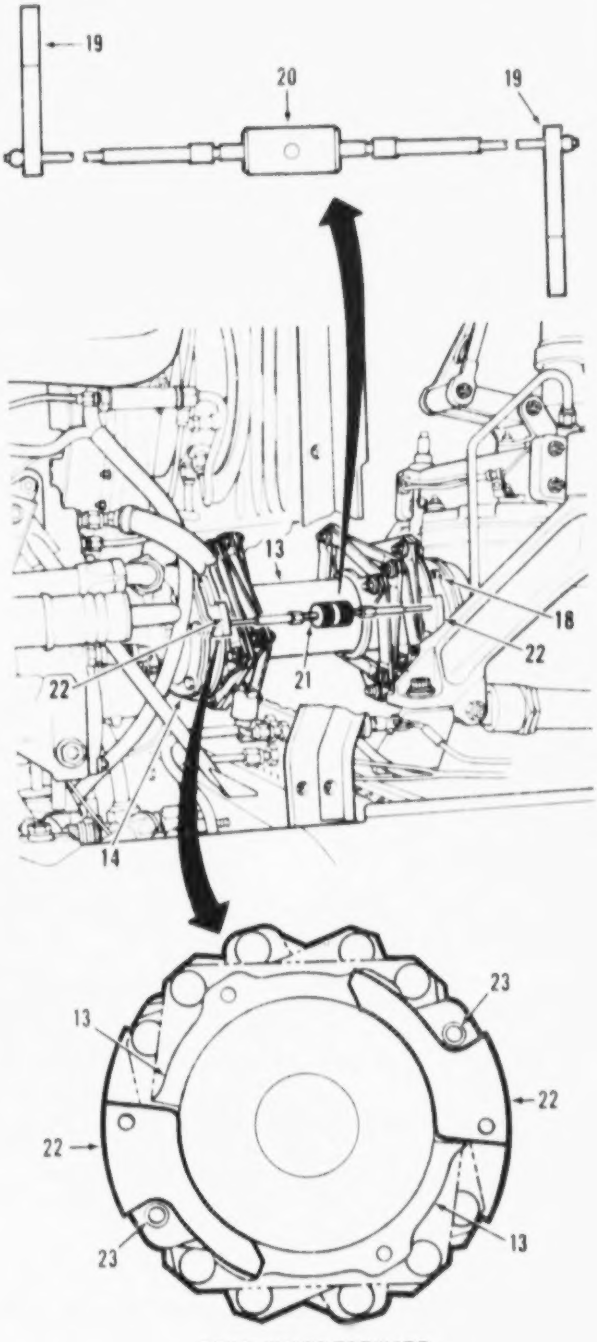
11. Assemble each half of tool set (B159) by connecting two bracket and cable assemblies (19) with turnbuckle (20).

12. Install each tool set half (21) by installing bracket (22) in groove of forward and aft fittings of driveshaft (13) and flexframe bolt (23).

NOTE

Engine to transmission driveshaft should be compressed to the extent necessary for installation.

13. Install driveshaft (13) between transmission input adapter (18) and freewheeling unit adapter (14).



DRIVE SHAFT FORWARD FITTING LOOKING AFT

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6-2-2. REMOVE/INSTALL ENGINE TO TRANSMISSION DRIVESHAFT (CONT)

REMOVE DRIVESHAFT TOOL SET (B159)

NOTE

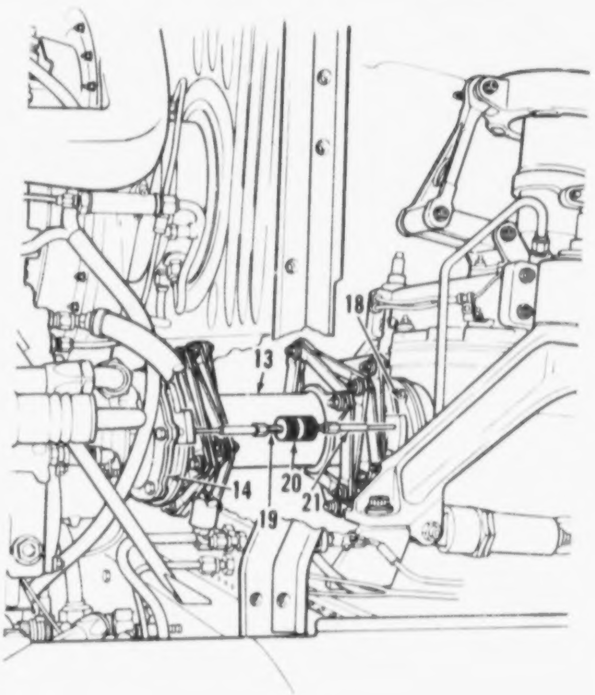
To aid in alignment, a bolt can be installed through driveshaft fittings and transmission input adapter (18) and freewheeling unit adapter (14) before tool set is removed.

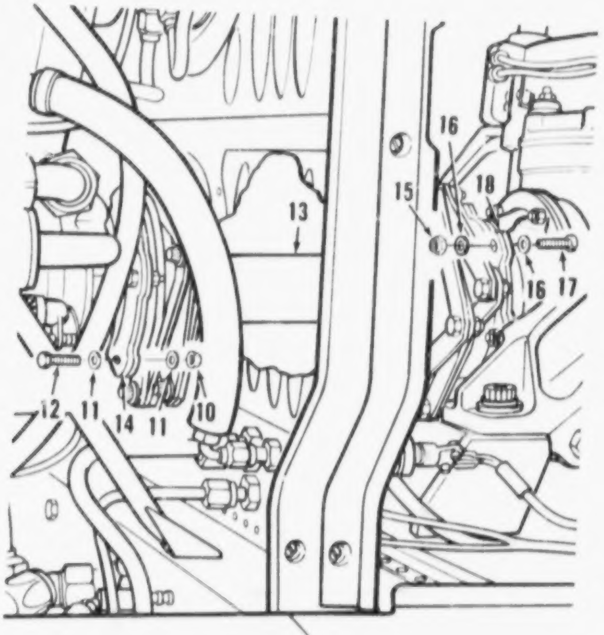
14. Turn turnbuckle (20) while holding hex nuts on tool set to loosen bracket and cable assembly (19). Remove tool set halves (21) from driveshaft (13).

15. Line up bolt holes in aft end fitting of driveshaft (13) with freewheeling unit adapter (14) bolt holes.

16. Install six washers (11) with six bolts (12) through aft end fitting of driveshaft (13) and freewheeling adapter (14). Install six washers (11) and six nuts (10). Torque nuts (10) **50-70 INCH-POUNDS**.

17. Install six washers (16) with six bolts (17) through transmission of input adapter (18) and forward end fitting of driveshaft (13). Install six washers (16) and six nuts (15). Torque nuts (15) **50-70 INCH-POUNDS**.





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6-2-2 REMOVE/INSTALL ENGINE TO TRANSMISSION DRIVESHAFT (CONT)

INSTALL DRIVESHAFT COVER

18. Install firewall closure plate (9) on aft side of forward firewall (6). Secure closure plate (9) with six washers (8) and six bolts (7).

19. Install driveshaft cover (3) on forward firewall (6). Secure driveshaft cover with 12 washers (5) and 12 bolts (4).

20. Install two washers (2) and two bolts (1) in driveshaft cover assembly (3).

INSPECT

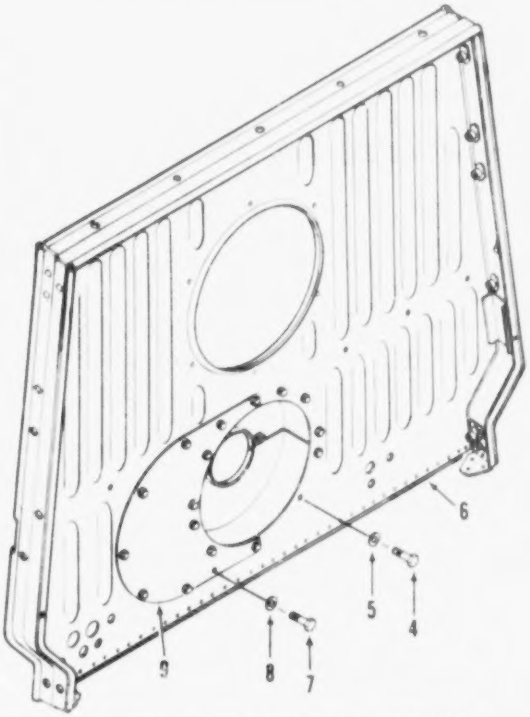
FOLLOW-ON MAINTENANCE

Install air induction cowling (Task 4-2-4).

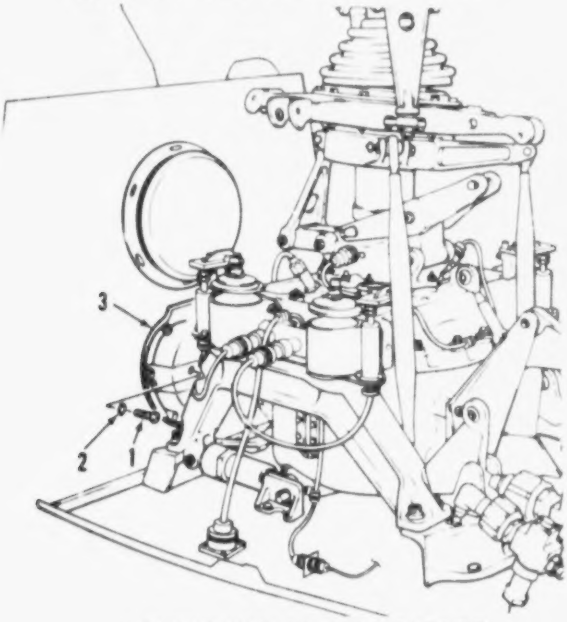
Install engine cowling (Task 2-1-24).

Install foward fairing assembly (Task 2-1-21).

Pilot perform MTF (TM 55-1520-248-MTF).



LOOKING INBOARD FORWARD - LEFT SIDE



LOOKING INBOARD, AFT, RIGHT SIDE

406040-56B

END OF TASK

6-2-3. CLEAN, INSPECT, AND REPAIR ENGINE TO TRANSMISSION DRIVESHAFT

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit

Materials:

Drycleaning Solvent (D1)
Abrasive Pad, Nylon Web, (Scotchbrite) (D24)
Wiping Rag (D53)
Primer, Zinc Chromate (D80)
Paint, Top Coating, Silver Sermetel (D87)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean driveshaft with drycleaning solvent (D1) and wiping rags (D53).

INSPECT

2. Inspect driveshaft to damage limits shown.

CAUTION

Driveshaft assembly is not to be taken apart, and fasteners are not to be disturbed. Disassembly or disturbing fasteners is cause for replacement.

GO TO NEXT PAGE

REPAIR

NOTE

Minimize removal of protective coating during repair. Repair must be within limits shown.

3. Repair by removing corrosion and damage using abrasive pads (D24).

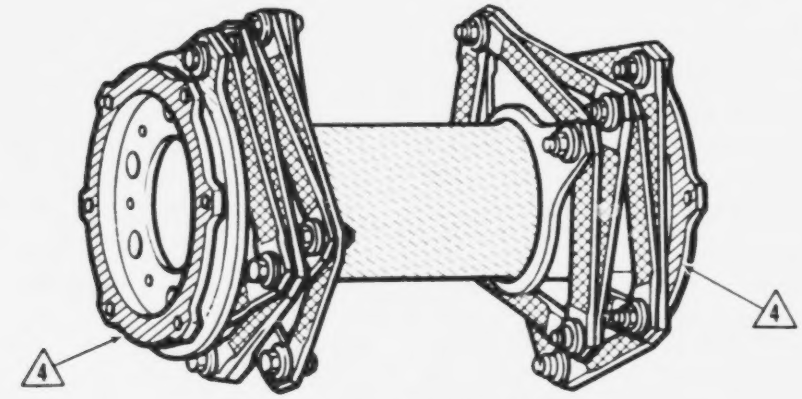
NOTE

Damage to protective coating (removal) of base metal may be touched up with zinc chromate primer (D80) and top coated with silver sermetel paint (D87).

Areas left bare, smaller than damage limits shown, will not corrode due to sacrificial properties of original protective coating.

INSPECT

6-2-3. CLEAN, INSPECT AND REPAIR ENGINE TO TRANSMISSION DRIVESHAFT (CONT)



ENGINE-TO-TRANSMISSION DRIVESHAFT
(FLEXFRAMES)

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	▩	░	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH			
MECHANICAL	0.001 In. before and after repair	0.005 In. before and after repair	0.005 In. before and after repair	0.015 In. before and after repair
CORROSION	Surface, no pits	0.005 In. before and after repair	0.005 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.05 Sq. in.	0.10 Sq. in.	△3 0.25 Sq. in.	0.25 Sq. in.
NUMBER OF REPAIRS	One per leg			
EDGE DENTS, NICKS	0.001 In.	0.010 In.	0.010 In.	0.025 In.

NOTES:

1. No cracks are permitted.
2. Repairs must be no less than 1.0 inch apart.

△3 Repairs not to be within 0.50 in. of bolt hole.

△4 Faying surfaces must be free of any raised metal areas.

406040-57B

END OF TASK

Section III. TRANSMISSION

This section covers maintenance procedures for the transmission. These procedures include inspection (On helicopter), removal, repair, preservation, build-up and installation.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Clean, Inspect, and Repair Transmission	6-3-1	6-29
Remove Transmission	6-3-2	6-31
Remove/Install and Clean, Inspect Lower Transmission Boot Assembly	6-3-3	6-38
Build Up Transmission	6-3-4	6-40
Preserve and Package Transmission	6-3-5	6-49
Install Transmission	6-3-6	6-53
Remove/Install Input Pinion Magnetic Seal (AVIM)	6-3-7	6-61
Remove/Install Upper Chip Detector	6-3-8	6-66
Remove/Install Thermostat	6-3-9	6-68
Remove/Install Temperature Transducer	6-3-10	6-70
Remove/Install Lower Chip Detector	6-3-11	6-72
Remove/Install Breather Tube Assembly	6-3-12	6-73
Remove/Install Sight Gage	6-3-13	6-75
Remove/Install and Clean, Inspect Pylon Fitting Assembly	6-3-14	6-77

6-3-1 CLEAN, INSPECT, AND REPAIR TRANSMISSION

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Electrical Repairer Tool Kit
Goggles

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68F Aircraft Electrician

Equipment Condition:

Air Induction Cowling Removed (Task 4-2-1)
Engine Cowling Removed (Task 2-1-24)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Forward Fairing Assembly Removed (Task 2-1-21)

General Safety Instructions:

WARNING

Ensure that no one operates flight controls from inside the helicopter during inspection of transmission. Physical injury can occur. If injury occurs, seek medical aid.

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CLEAN

1. Clean exterior of transmission with drycleaning solvent (D1) and wiping rag (D53) as required to accomplish subsequent inspections.

NOTE

This inspection is to determine if any part of the transmission installation is damaged to the extent that it should be replaced or repaired.

GO TO NEXT PAGE

6-3-1. CLEAN, INSPECT, AND REPAIR TRANSMISSION (CONT)

2. Inspect transmission top case (1) and gearshaft support case (2) for obvious damage (nicks, scratches, and gouges).

3. Repair transmission case nicks, scratches, and gouges.

4. Inspect area around input quill housing (3) for leakage, security of attachment, and any obvious damage.

5. Inspect input quill magnetic seal (4) for obvious damage or leakage. All sources on transmission not to exceed 5 drops per minute.

6. Replace seal (4) as necessary (Task 6-3-7).

7. Inspect chip detectors (5) for bent or damaged bayonet pins and electrical connector pins; straighten bent pins. Replace damaged connector pins. No other damage allowed.

8. Replace chip detectors (5) as necessary (Tasks 6-3-8 and Task 6-3-11).

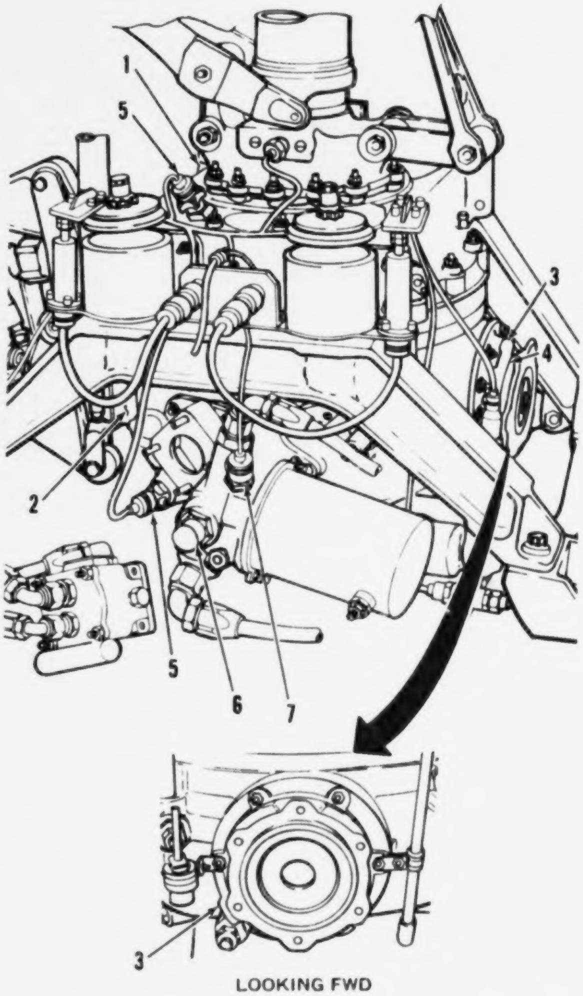
9. Inspect transmission oil filter thermostat (6) for obvious damage. No obvious damage allowed.

10. Replace thermostat (6) as necessary (Task 6-3-9).

11. Inspect transmission oil temperature bulb (7) for loose or damaged electrical wires. Repair wiring. No other damage allowed.

12. Replace temperature bulb (7) as necessary (Task 6-3-10).

13. Inspect wiring harness for loose, broken or damaged wires, and electrical connector. Repair or replace damaged connectors or wires.



406040-47A

INSPECT

FOLLOW-ON MAINTENACE

Install forward fairing assembly (Task 2-1-21).

Install air induction cowl (Task 4-2-4).

Install engine cowl (Task 2-1-24).

Install engine to transmission driveshaft (Task 6-2-2).

END OF TASK

6-3-2. REMOVE TRANSMISSION

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

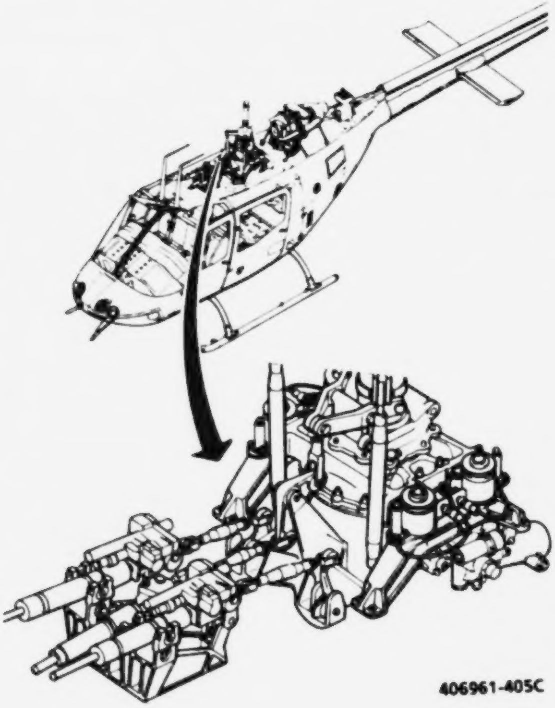
Aircraft Mechanic Tool Kit
Trailer Adapter (B78)
Mast Clevis Tool (B165)
Hoist
Guide Lines
Plastic Scraper (Work Aid)
Lifting Eye Clevis (B263)

Personnel Required:

67S Scout Helicopter Repairer (3)

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Air Induction Cowling Removed (Task 4-2-1)
Engine Cowling Removed (Task 2-1-24)
Main Rotor Hub and Blades Removed (Task 5-1-1)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Transmission Oil Drained (Task 1-4-6)
Torquemeter Support and Bearing Assembly Removed (Task 6-4-4)
Mast Standpipe Removed (Task 6-4-1)



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6-3-2. REMOVE TRANSMISSION (CONT)

REMOVE

1. Disconnect electrical connectors (1 and 2) from right side of transmission deck and particle separator blower connector.

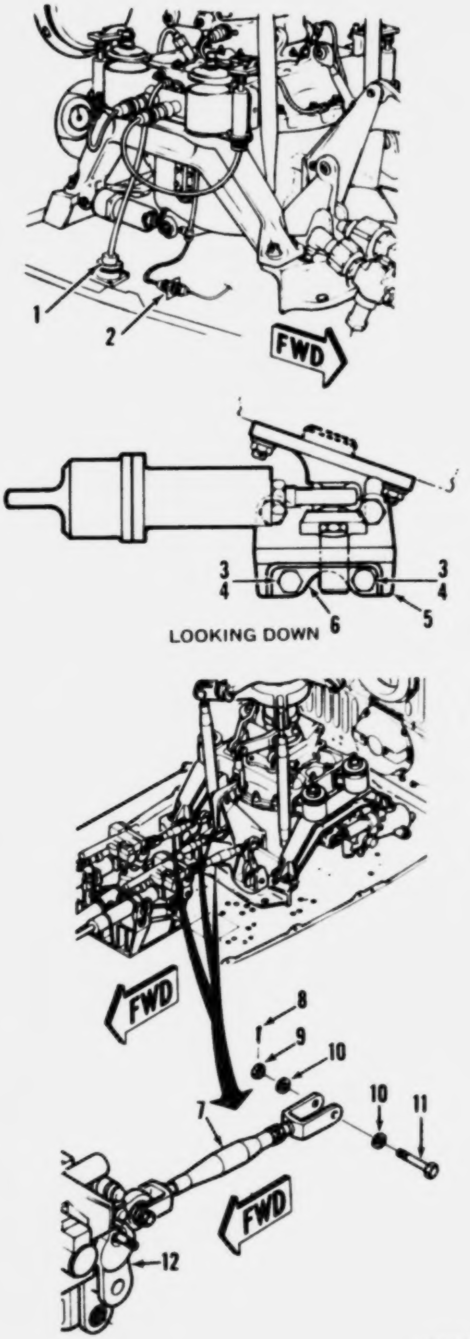
2. Remove four bolts (3), four washers (4) securing pylon stop fitting (5) from right side of transmission deck. Remove pylon stop fitting (5).

NOTE

Do not remove bonded shim (6) below pylon stop fitting (5).

3. Disconnect cyclic and collective adjustable tube assemblies (7) by removing cotter pin (8), nut (9), washers (10), and bolt (11).

4. Wrap the three assemblies (7) with paper or rags and tie or tape back to servos (12).



406040-315

GO TO NEXT PAGE

5. Disconnect electrical connector (13) from lower chip detector (14).

6. Disconnect case drain hose (15) from elbow (16).

7. Disconnect suction line hose (17) from union (18).

8. Disconnect pressure line hose (19) from union (20).

9. Cap or plug hoses (15, 17, and 19) and elbow (16) and unions (18 and 20) on hydraulic pump (21).

10. Disconnect transmission oil temperature transducer electrical connector (22) electrical wiring (23) from roof mounted connector (24).

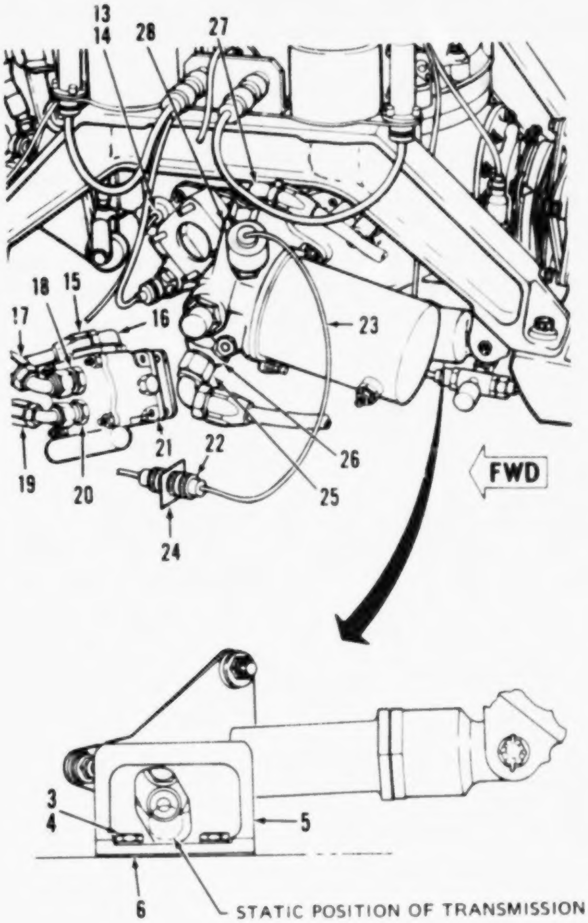
11. Disconnect oil filter outlet line (25) from fitting (26). Install protective covers to openings.

12. Disconnect oil filter inlet line (27) from fitting (28). Install protective covers to openings.

13. Remove four bolts (3) and four washers (4) securing pylon stop fitting (5) from left side of transmission deck. Remove pylon stop fitting (5).

NOTE

Do not remove bonded shim (6) below pylon stop fitting (5).



406040-316

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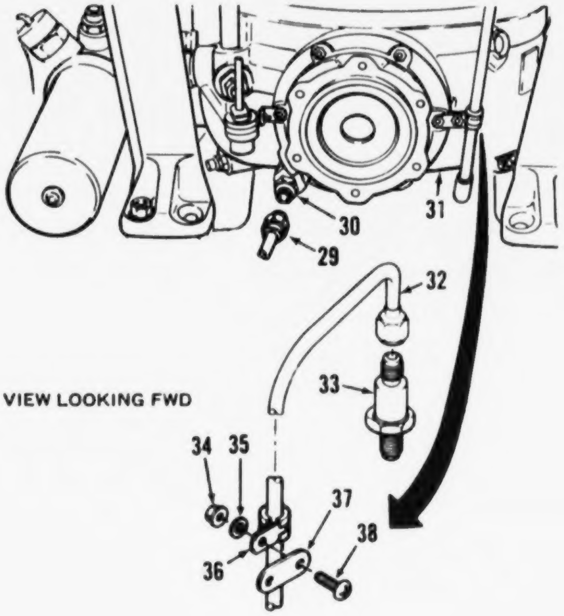
6-3-2. REMOVE TRANSMISSION (CONT)

14. Disconnect freewheeling unit oil line (29) from fitting (30) on transmission (31).

15. Disconnect breather line (32) from breather (33).

16. Remove nut (34) and washer (35) from clamp (36), adapter (37), and screw (38).

17. Remove mast torque temperature sensor (39) and clamp (40) from bracket (41), by removing nut (42), washer (43) and screw (44).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VIEW LOOKING FWD
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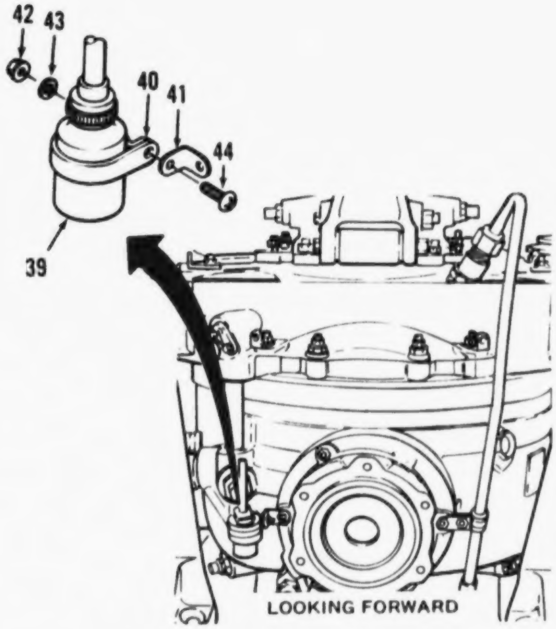
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39
LOOKING FORWARD

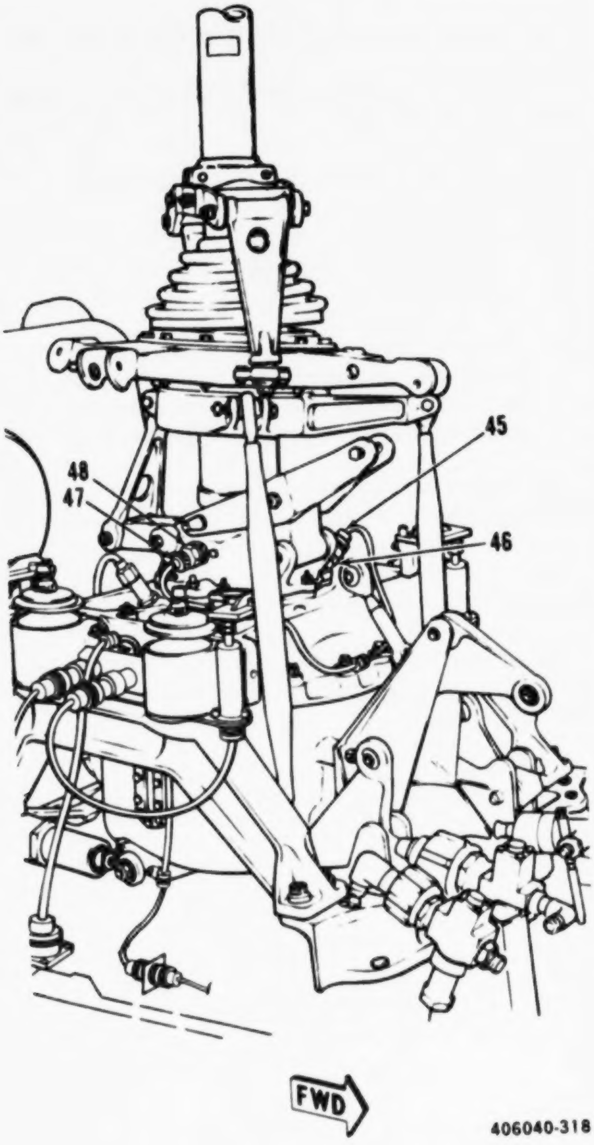
406040-317

GO TO NEXT PAGE

6-3-2. REMOVE TRANSMISSION (CONT)

18. Disconnect electrical connector (45) from upper transmission chip detector (46).

19. Disconnect electrical connector (47) from lower torque transducer (48).



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6-3-2. REMOVE TRANSMISSION (CONT)

20. Install mast clevis tool (B165) (49) on mast (50).

21. Install lifting eye clevis (B263) (51) on mast clevis tool (B165) (49).

22. Connect hoist to lifting eye clevis (51).

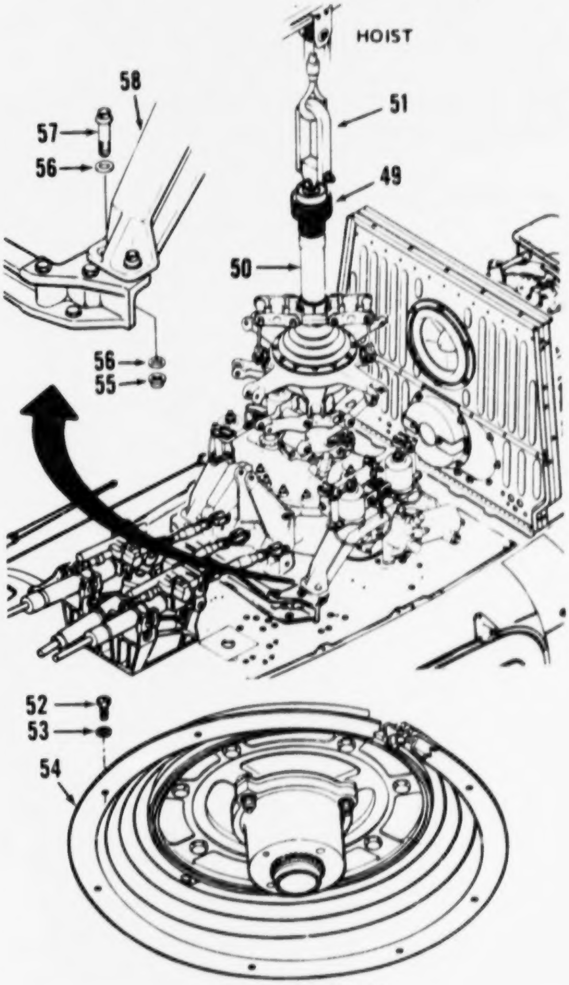
CAUTION

Remove slack from hoist to prevent accidental movement of transmission causing damage to cabin roof mounted components when bolts are removed.

23. Remove eight screws (52) and eight washers (53) attaching boot assembly (54) to cabin roof.

24. Cut or scrape sealant from around boot assembly (54) and cabin roof.

25. Remove eight nuts (55), sixteen washers (56), and eight bolts (57) from legs of pylon beam assembly (58).



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406040-249C

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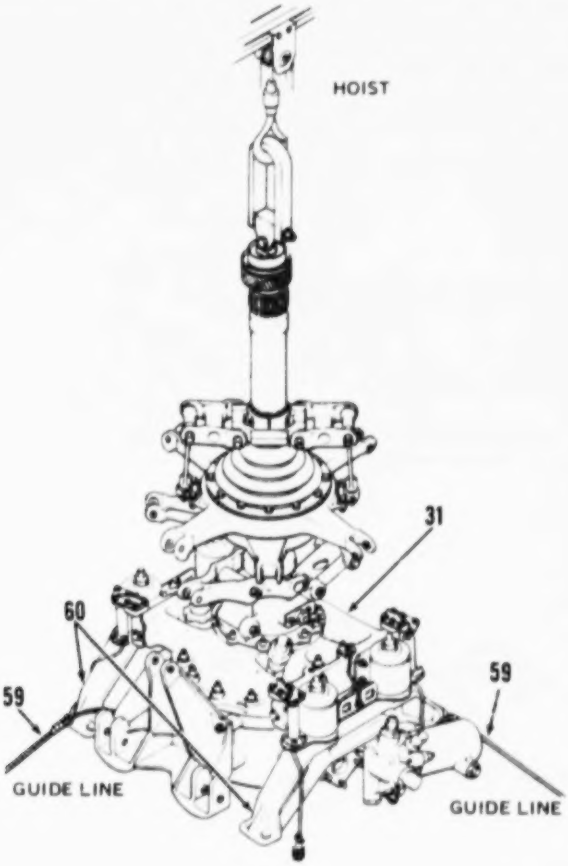
6-3-2. REMOVE TRANSMISSION (CONT)

26. Install guide lines (59) on forward leg and aft leg of pylon beam assembly (60).

27. Remove transmission (31) using hoist with guide lines (59) to aid in placing transmission on aircraft maintenance trailer (B78).

FOLLOW-ON MAINTENANCE

Build up transmission (Task 6-3-4).


HOIST
31
60
59
59
GUIDE LINE
GUIDE LINE

406040-20C

END OF TASK

6-3-3. REMOVE/INSTALL AND CLEAN, INSPECT LOWER TRANSMISSION BOOT ASSEMBLY

This task covers: **Removal, Installation, and Cleaning, Inspection (Off Helicopter)**

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Parts:

Strap (2)

Materials:

Wiping Rag (D53)
Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Transmission Removed (Task 6-3-2)

GO TO NEXT PAGE

6-3-3. REMOVE/INSTALL AND CLEAN, INSPECT LOWER TRANSMISSION BOOT ASSEMBLY (CONT)

REMOVE

CAUTION

Exercise care to avoid cutting boot assembly when cutting straps.

1. From outside boot assembly (1) cut straps (2) and remove boot assembly (1) and retainer (3) from lower transmission flange.

CLEAN

2. Clean boot assembly (1) and retainer (3) using wiping rag (D53).

INSPECT

3. Inspect boot assembly (1) for cuts, tears, and deterioration.

REPAIR (None Authorized)

INSTALL

4. Position retainer (3) on top of boot assembly (1) flange. Secure boot assembly (1) to transmission flange from outside boot using two straps (2).

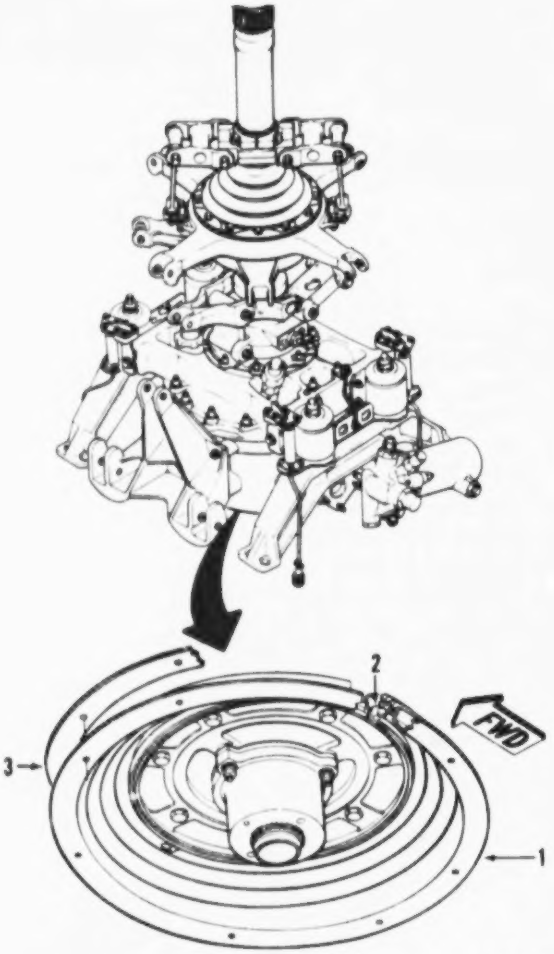
NOTE

A double wrap of lockwire (D4) may be used as an alternate for securing the boot assembly (1) to transmission flange.

INSPECT

FOLLOW-ON MAINTENANCE

Install transmission (Task 6-3-8)



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END OF TASK

6-3-4. BUILD UP TRANSMISSION

This task covers: Buildup (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Cover and Lift Plate (B142)
Aircraft Mechanic Tool Kit
Hoist
Adapter Transmission (B78)
Aircraft Maintenance Trailer
Torque Wrench, 30–150 Inch-Pounds
Mast Clevis Tool (B165)
Lifting Eye Clevis (B263)
Drain Hose (B59)
Suitable Oil Container

Parts:

Filter Element
Nut, Self-Locking Steel

Materials:

Wiping Rag (D53)
Oil, Lubricating (D2 or D3)
Sealant, Proseal 890 (D20)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer (3)

GO TO NEXT PAGE

6-3-4. BUILD UP TRANSMISSION (CONT)

1. Remove two pylon restraint spring assemblies (1) from transmission (2) (Task 2-3-2).

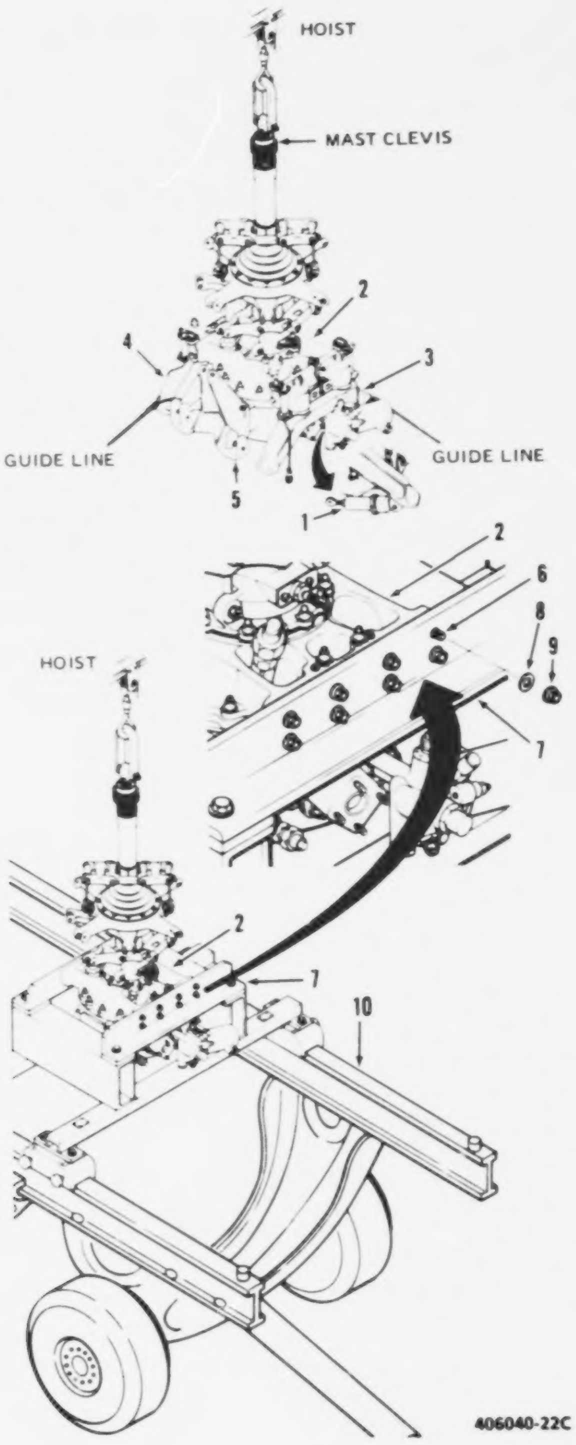
2. Remove guide lines from pylon beams (3 and 4).

3. Remove pylon beams (3 and 4) from transmission (2) (Task 2-3-2).

4. Remove cyclic and collective control support (5) from transmission (2) (Task 11-3-60).

5. Line up transmission studs (6) with holes in transmission adapter (B78) (7). Install 16 washers (8) and 16 nuts (9).

6. Install transmission (2) on aircraft maintenance trailer (10). Remove hoist.


HOIST
MAST CLEVIS
2
4
3
GUIDE LINE
GUIDE LINE
5
1
2
6
8
9
HOIST
7
2
7
10
406040-22C

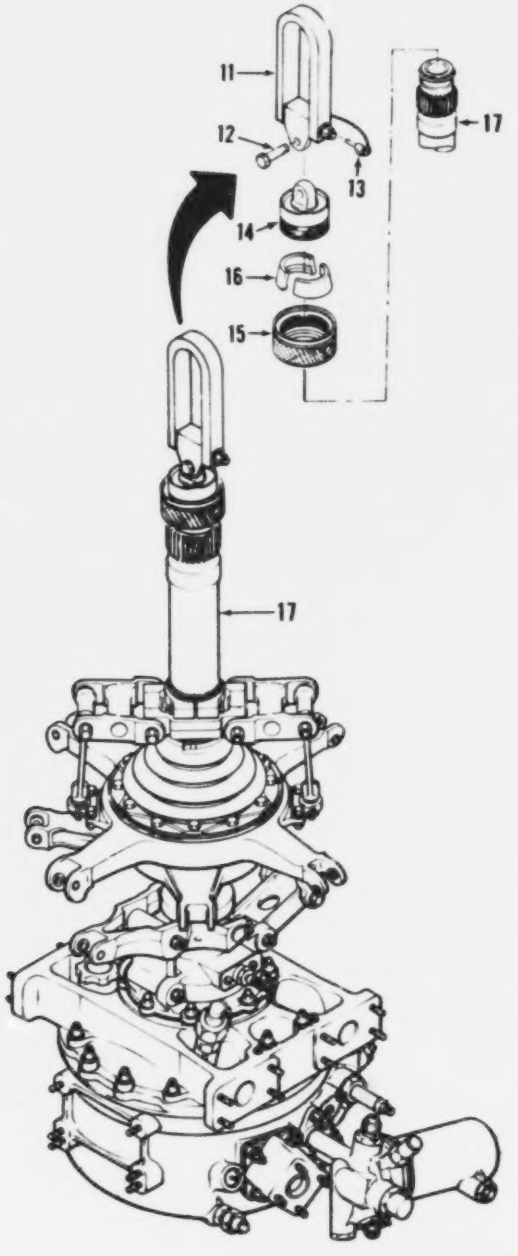
GO TO NEXT PAGE

6-3-4. BUILD UP TRANSMISSION (CONT)

7. Remove lifting eye clevis (B263) (11) by removing pins (12) and (13).

8. Remove upper bracket of mast clevis tool (B165) (14) from holder (15) using a spanner wrench.

9. Remove cone set (16) and holder (15) from mast (17).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406040-46C

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10. Remove swashplate and support assembly (19) from transmission (2) (Task 5-2-32).

11. Remove mast assembly (18) from transmission (2) (Task 6-4-14).

12. Remove three nuts (20) and three washers (21) from three studs (22) on bottom of transmission.

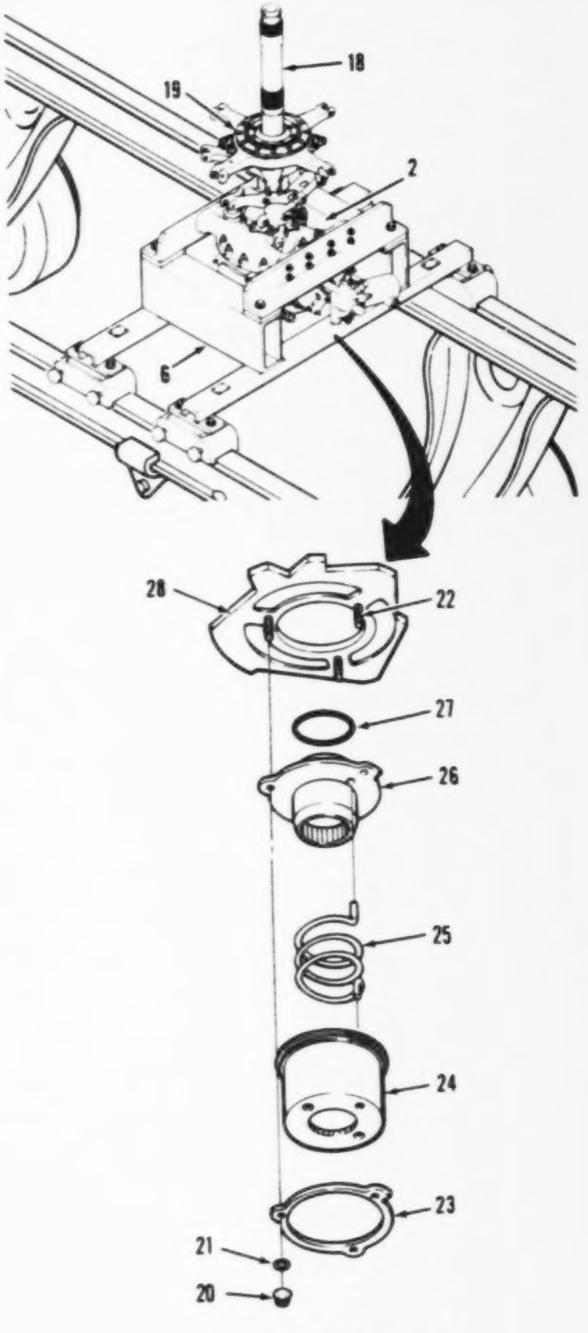
13. Remove retaining plate (23), spring sleeve (24), and spring (25) from standpipe adapter (26).

14. Remove standpipe adapter (26) with packing (27) from support (28). Discard packing (27).

NOTE

Transmission shall be preserved before removing from adapter (B78) (6).

15. Preserve unserviceable transmission (2) (Task 6-3-5).



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6-3-4. BUILD UP TRANSMISSION (CONT)

16. Install cover and lift plate (B142) (29) on studs (30).

17. Install 12 washers (31) and 12 nuts (32) on studs (30).

18. Connect hoist to lifting eye on cover and lift plate (B142) (29).

19. Remove 16 nuts (8) and 16 washers (7) from 16 studs (5) on transmission. Remove transmission (2) from adapter (B78) (6).

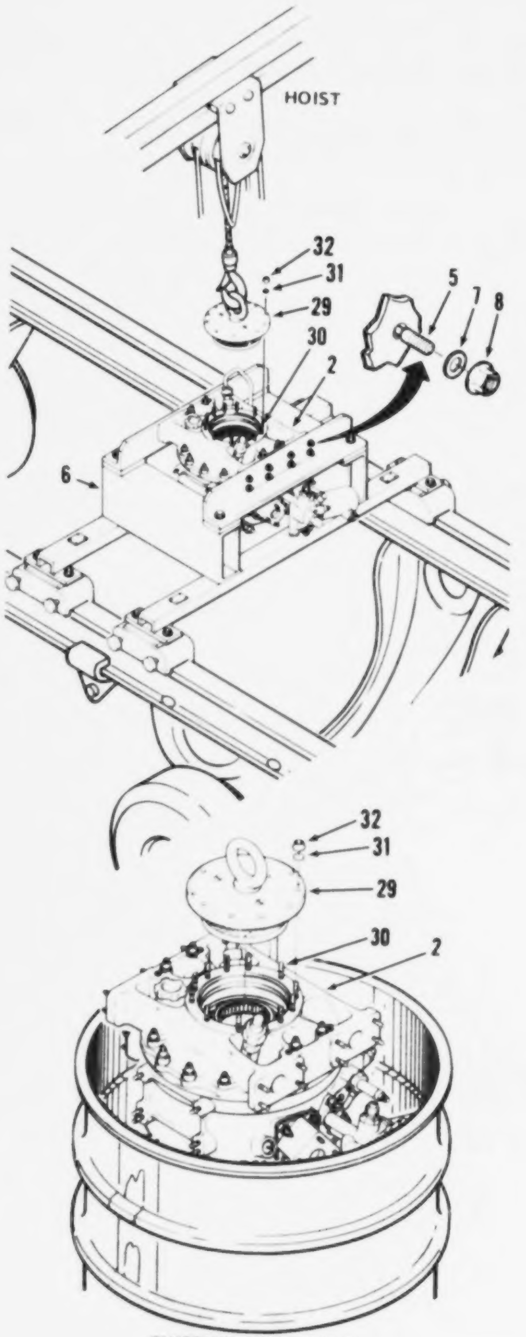
NOTE

Unserviceable transmission shall be packaged for turn-in before starting buildup of serviceable transmission.

20. Package unserviceable transmission for shipping (Task 6-3-5).

21. Install cover and lift plate (B142) (29) on 12 studs (30) of serviceable transmission (2).

22. Install 12 washers (31) and 12 nuts (32).



406040-24B

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6-3-4. BUILD UP TRANSMISSION (CONT)

23. Install transmission (2) in transmission adapter (B78) (6).

24. Line up 16 studs (5) on transmission (2) with holes in transmission adapter (B78) (6).

25. Install 16 washers (7) and 16 nuts (8) on 16 studs (5).

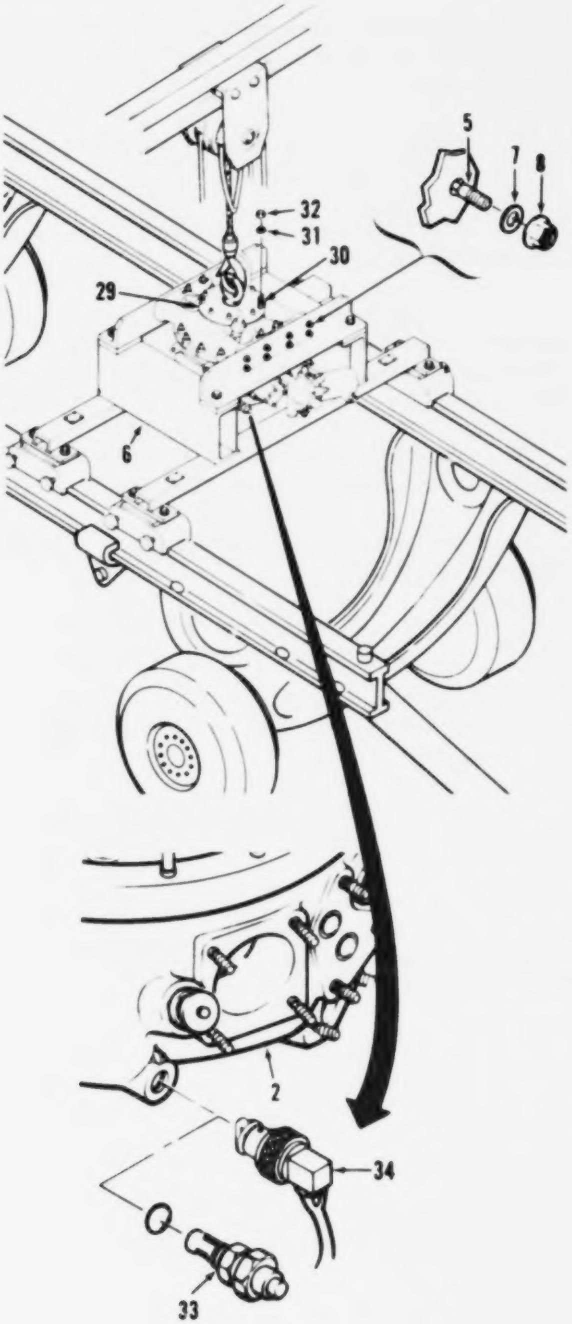
26. Disconnect hoist from cover and lift plate (B142) (29).

27. Remove 12 nuts (32), 12 washers (31), and remove cover and lift plate (B142) (29) from 12 studs (30).

28. Remove chip detector (33) from transmission (2) and install drain hose (B59) (34).

29. Flush preservative out of transmission with two quarts of lubricating oil (D2 or D3) and drain into suitable oil container. Remove drain hose (34) and install chip detector (33).

30. Remove shipping plate from bottom of transmission.



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6-3-4. BUILD UP TRANSMISSION (CONT)

31. Install new packing (27) on standpipe adapter (26). Install standpipe adapter (26) on studs (22) in support (28).

32. Install spring (25) in spring sleeve (24); line up spring end with hole in spring sleeve.

33. Install retaining plate (23) on spring sleeve (24) and spring (25).

34. Line up spring end with hole in standpipe adapter (26) and install spring, spring sleeve and retaining plate assembly on standpipe adapter (26) and studs (22).

35. Install three washers (21) and three nuts (20) on studs (22). Torque nuts **50-70 INCH-POUNDS**.

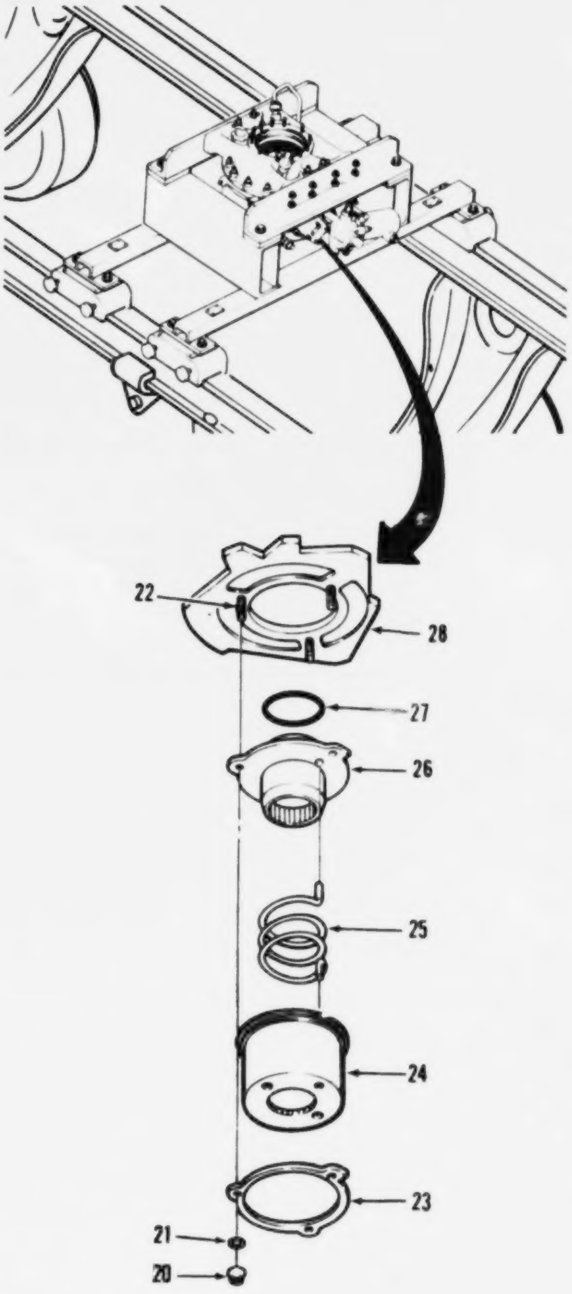
36. Apply sealant (D20) to outside mating surface of support (28).

NOTE

> After flushing preservative from replacement transmission, oil filter must be replaced.
>
> Drain/service transmission oil system (Task 1-4-6).

37. Install mast assembly (Task 6-4-18).

38. Install swashplate and support assembly (Task 5-2-37).



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406040-58A

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6-3-4. BUILD UP TRANSMISSION (CONT)

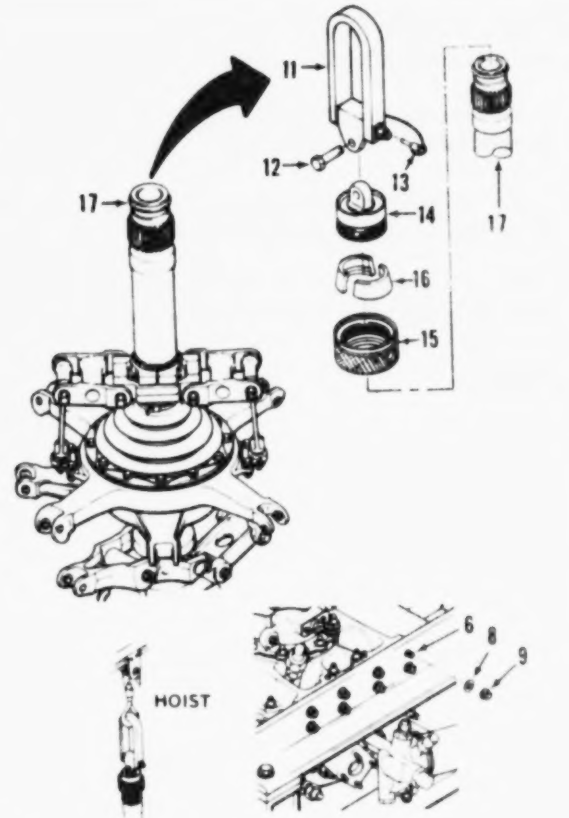
39. Slide holder (15) over splines of mast (17). Place cone set (16) inside holder (15) and align with area normally occupied by split cone set.

40. Set upper bracket (14) in holder (15) and tighten assembly (B165) using a spanner wrench.

41. Position lifting eye clevis (B263) (11) on upper bracket of mast clevis tool (B165) (14). Install pin (12) and (13). Attach hoist cable to lifting eye clevis (11) and take up slack.

42. Remove 16 nuts (9) and 16 washers (8) from 16 studs (6) on transmission (2).

43. Remove transmission (2) from adapter (7) mounted on aircraft maintenance trailer (10).



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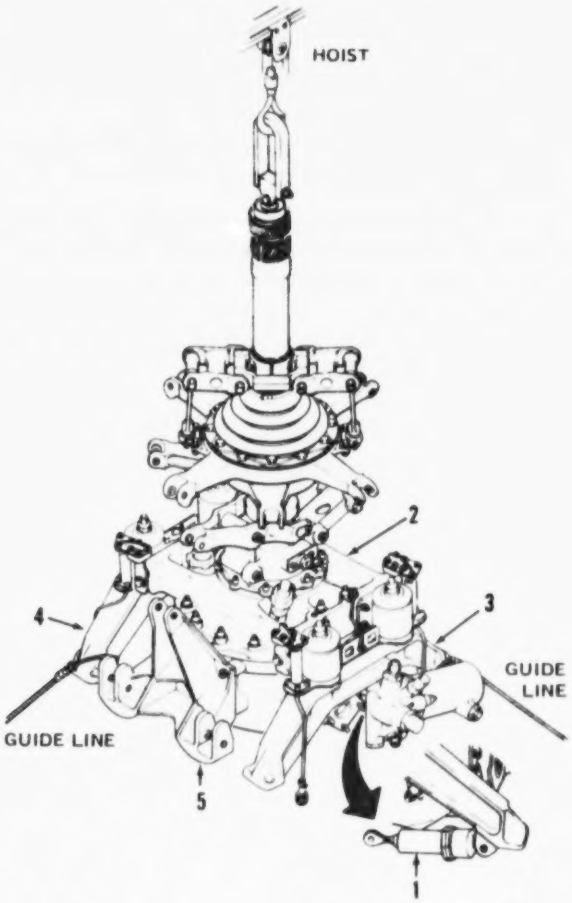
6-3-4. BUILD UP TRANSMISSION (CONT)

44. Install cyclic and collective control support (5) on transmission (2) (Task 11-3-60).

45. Install two pylon beams (3 and 4) on transmission (2) (Task 2-3-2).

46. Install two pylon restraint spring assemblies (1) on transmission (2) (Task 2-3-2).

47. Connect guide lines to forward and aft leg of pylon beams (3 and 4) to aid in handling.



406040-28C

INSPECT

END OF TASK

6-3-5. PRESERVE AND PACKAGE TRANSMISSION

This task covers: Preservation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Cover and Lifting Plate (B142)
Drain Hose (B59)
Hoist
Container, Shipping
Suitable Oil Container

Materials:

Oil Lubricating (D2 or D3)
Corrosion Preventive Compound (D16)
Solvent, Drycleaning (D1)
Wiping Rag (D53)
Barrier Material (D34)
Tape, Adhesive Pressure (D33)
Desiccant, Activated (D55)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 55-1500-204-25/1
DA PAM 738-51
TB 750-126

GO TO NEXT PAGE

6-3-5. PRESERVE AND PACKAGE TRANSMISSION (CONT)

CAUTION

Extreme care must be taken while cleaning, preserving, and packaging the transmission to prevent damage to the chip detectors.

1. Install shipping cover on bottom of transmission (1).

2. Through mast opening, spray interior of transmission (1) with one pint of lubricating oil (D2 or D3). While spraying, manually rotate the internal gears and bearings with the input drive quill adapter (2).

3. Remove chip detector (3) from transmission (1) and install drain hose (B59) (4). Drain oil in suitable oil container. Remove drain hose (B59) (4) and install chip detector (3).

4. Install cover and lift plate (B142) (5) on 12 studs (6) on transmission (1).

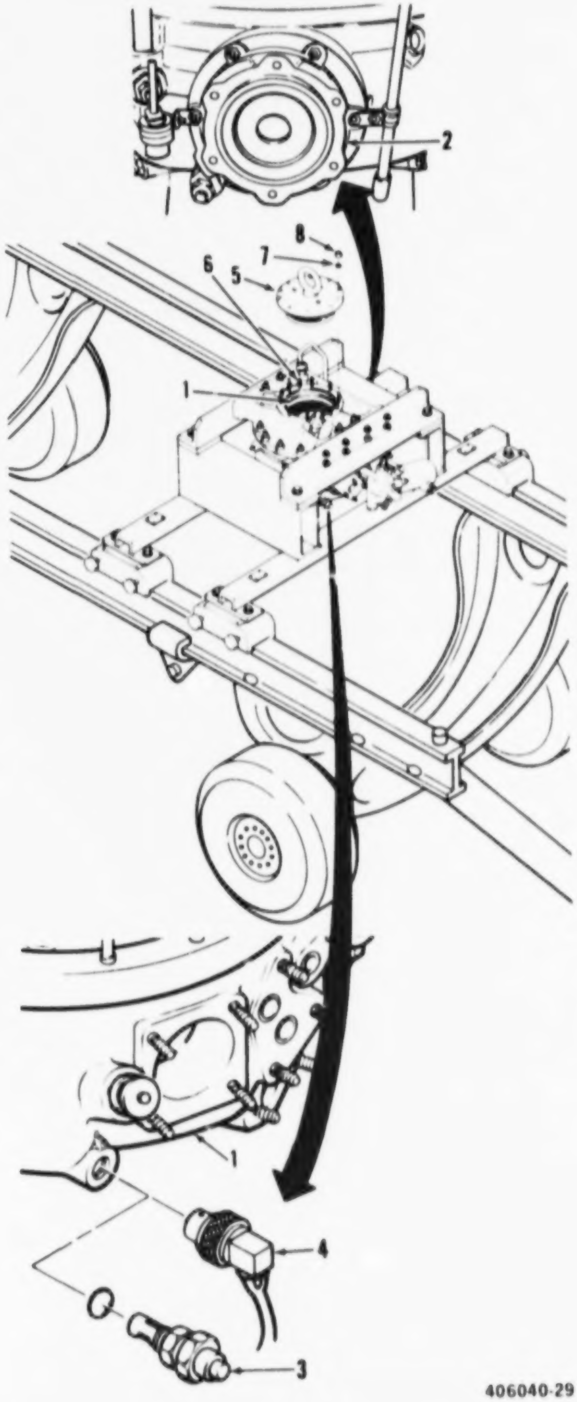
5. Install 12 washers (7) and 12 nuts (8).

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area. Wear gloves (D119) and goggles. In case of contact, flush skin or eyes with water for at least 15 minutes. Get medical aid for eyes.

6. Clean exterior of transmission (1), including splines and threaded areas, with drycleaning solvent (D1).

7. Air-dry or wipe with a clean dry wiping rag (D53).



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6-3-5 PRESERVE AND PACKAGE TRANSMISSION (CONT)

8. Cap or plug all fittings and ports as applicable, in accordance with TM 55-1500-204-25/1.

9. Cover breather holes and all other openings with barrier material (D34).

CAUTION

Do not allow corrosion preventive compound to contact rubber parts, for deterioration of rubber parts will result.

10. Apply corrosion preventive compound (D16) to all exterior bare metal surfaces, including splines, studs and thread areas.

11. Attach a tag to the transmission stating: TRANSMISSION PRESERVED WITH LUBRICATING OIL, MIL-L-23699.

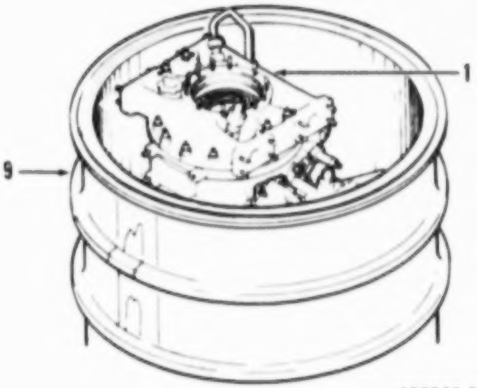
12. Attach a properly filled out DD Form 1577-2 (Unserviceable/Reparable Tag) to the transmission (1) and a DD Form Label 1577-3 to exterior of the shipping container (B210) (9). Refer to TB 750-126.

13. Initiate DA Form 2410 (Component Removal and Repair/Overhaul Record) in accordance with DA PAM 738-751.

NOTE

Be sure to place copies of DA Form 2410 in a grease proof envelope and stow in top of container.

14. Cover input drive spline and hydraulic pump drive spline areas with barrier material (D34) and secure with tape (D33).



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6-3-5 PRESERVE AND PACKAGE TRANSMISSION (CONT)

INSPECT

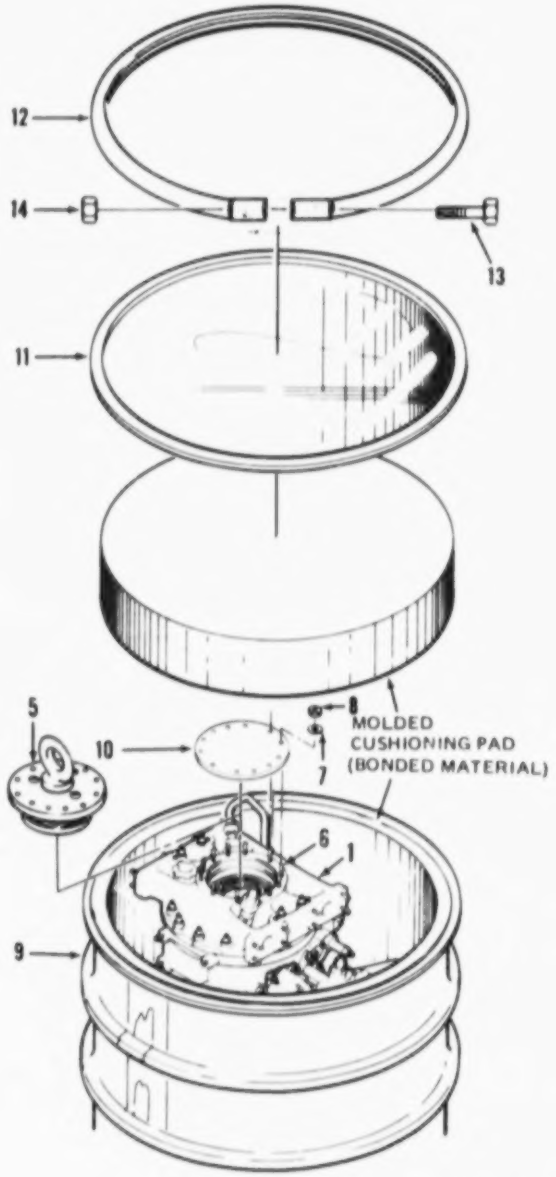
15. Connect hoist and lower transmission (1) into shipping container (9) and onto bottom molded pad.

16. Remove 12 nuts (8), 12 washers (7), and cover and lift plate (B142) (5).

17. Install shipping cover (10) on 12 studs (6) with 12 washers (7) and 12 nuts (8).

18. Install upper molded pad over top of transmission (1) and install 24 units of desiccant (D55) in top of shipping container (9).

19. Install records in top of shipping container (B210) (9) and secure lid (11) of container (9) in place using retainer ring (12), bolt (13), and nut (14).



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END OF TASK

6-3-6. INSTALL TRANSMISSION

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Hoist
Guide Lines
Mast Clevis Tool (B165)
Lifting Eye Clevis (B263)
Torque Wrench 30-150 Inch-Pounds
Torque Wrench, 700-1600 Inch-Pounds

Materials:

Sealant Proseal (D20)
Adhesive (D149)
Lockwire (D4)

Personnel Required:

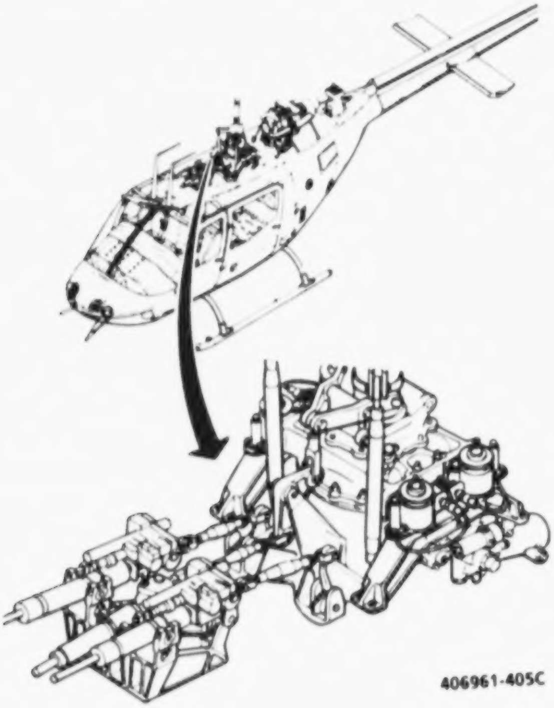
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer (3)
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Air Induction Cowling Removed (Task 4-2-1)
Engine Cowling Removed (Task 2-1-24)
Main Rotor Hub and Blades Removed (Task 5-1-1)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Torquemeter Support and Bearing Assembly Removed (Task 6-4-4)
Mast Standpipe Removed (Task 6-4-1)



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6-3-6. INSTALL TRANSMISSION (CONT)

INSTALL

NOTE

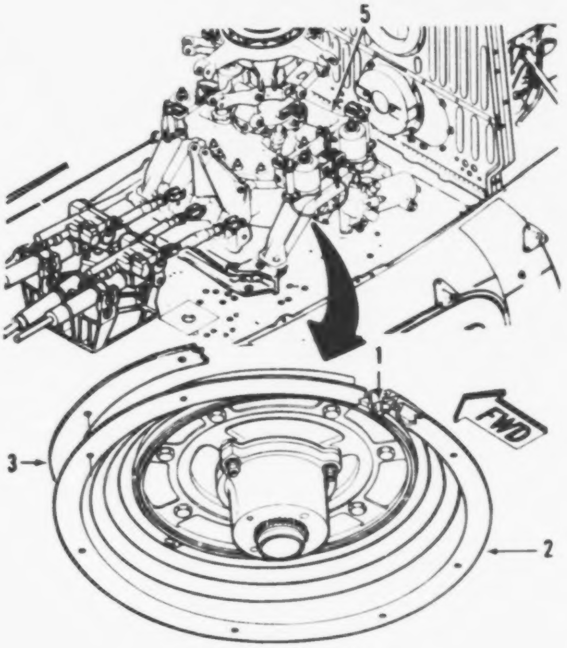
> A double wrap of lockwire (D4) may be used as an alternate for securing the boot assembly to transmission flange.

1. Ensure two straps (1) and boot assembly (2) are positioned to flange on bottom of transmission. Position retainer (3) in place above boot assembly (2).

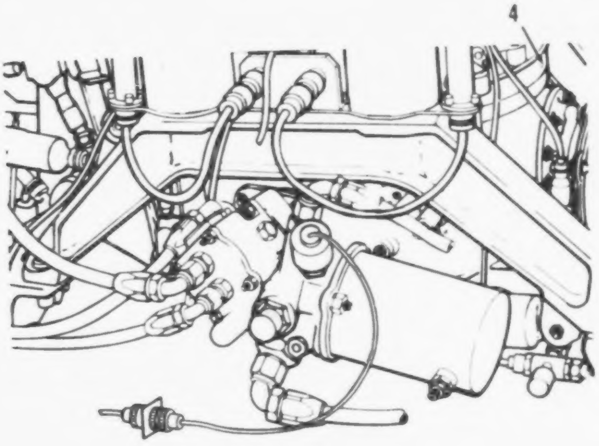
NOTE

> Refer to task 6-3-4 for buildup instructions on new transmission.

2. Using hoist, position transmission assembly (4) on forward and aft transverse beams (5).



VIEW LOOKING UP



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6-3-6 INSTALL TRANSMISSION (CONT)

3. Secure transmission (4) to beam assembly (6) with eight bolts (7), sixteen washers (8), and eight nuts (9). Torque nuts (9), or bolt heads (7) **768-840 INCH-POUNDS.**

INSPECT

4. Disconnect hoist from lifting eye (10).

5. Position pylon stop fitting (11) over bonded shim (12), start two bolts (13) and two washers (14) in the two back holes of pylon stop fitting (11) left side of transmission (4).

6. Start two bolts (13) and two washers (14) in the forward holes of pylon stop fitting (11) left side of transmission (4).

7. Position pylon stop fitting (11) over bonded shim (12). Start two bolts (13) and two washers (14) in back holes of pylon stop fitting (11) right side of transmission (4).

8. Start two bolts (13) and two washers (14) in forward holes of pylon stop fitting (11) on right side of transmission (4).

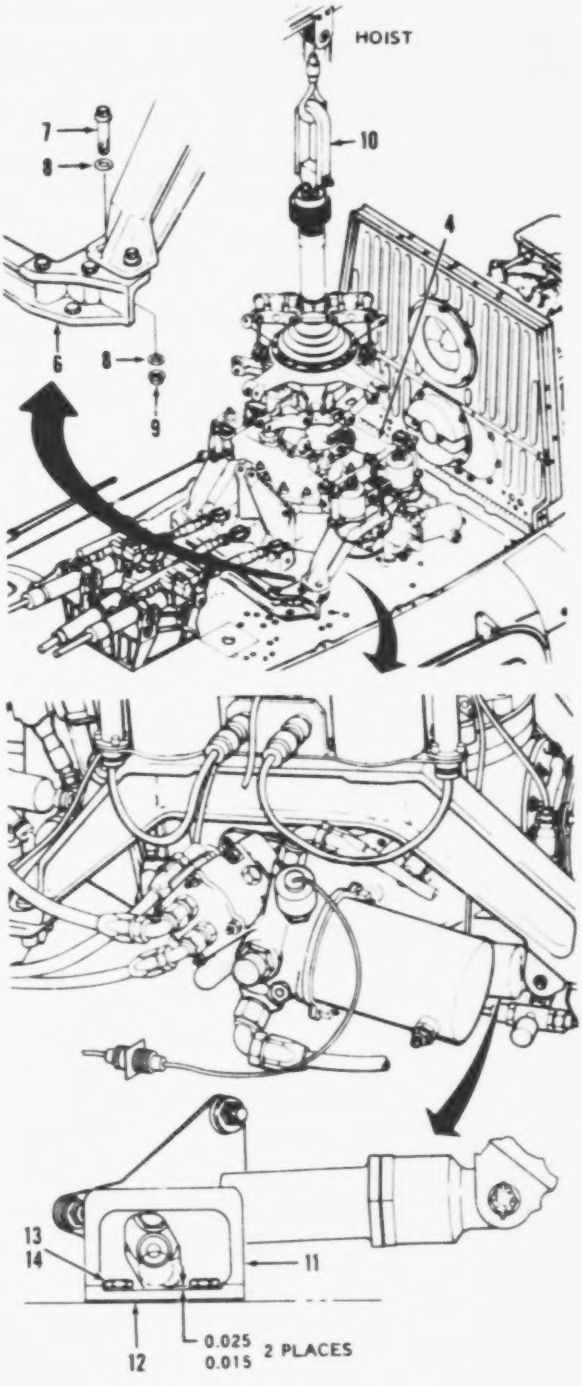
9. Torque two bolts (13) in two back holes on left side, and two bolts (13) in two back holes on right side, of pylon stop fitting (11). **90-110 INCH POUNDS.**

10. Torque two bolts (13) on left side, and two bolts (13) on right side, in the forward holes of pylon stop fitting (11). **70-95 INCH POUNDS.**

INSPECT

NOTE

A gap of 0.015 to 0.025 inch is required at center of pylon stop fitting and transmission deck when transmission and mast assembly is installed, but not hub and blade assembly. This is applicable to left and right side of transmission. Remove or replace shim as needed to obtain required gap.



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6-3-6. INSTALL TRANSMISSION (CONT)

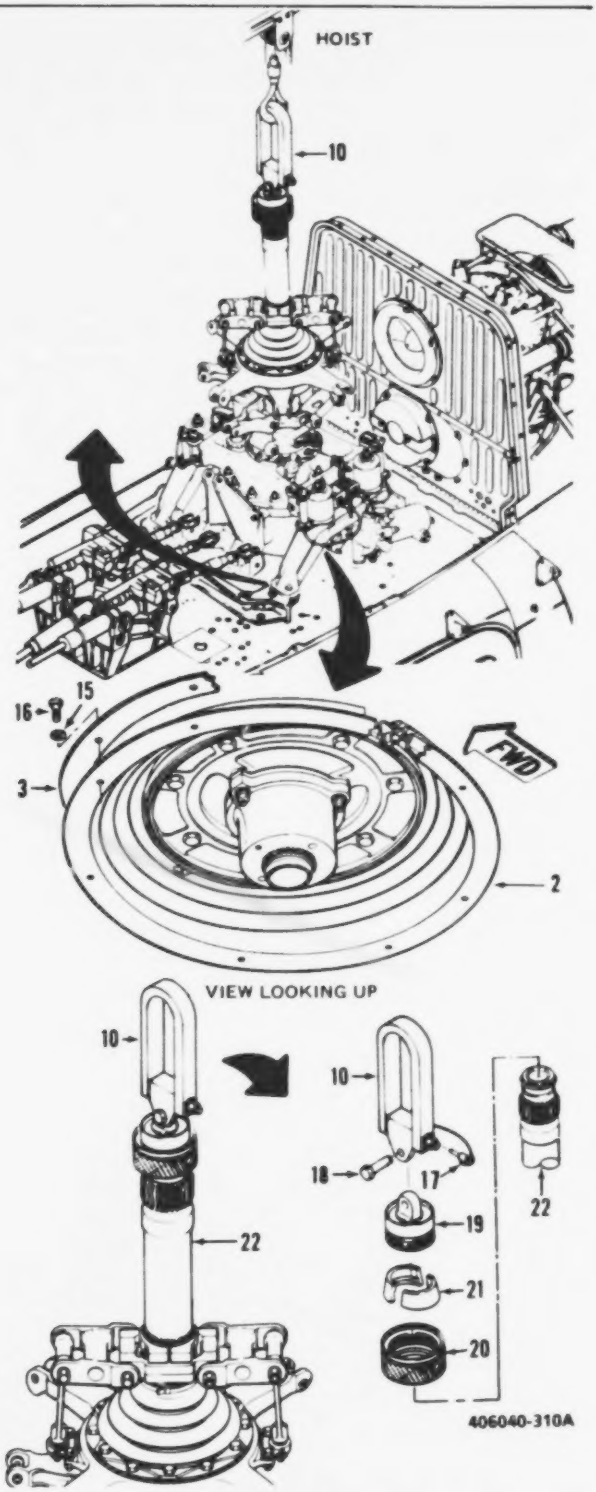
11. Secure retainer (3) and boot assembly (2) to cabin roof with eight washers (15) and eight screws (16).

12. Apply a bead of sealing compound (D20) to cabin roof and boot assembly (2) mating surface.

13. Remove pin (17) from bolt (18) and lifting eye clevis (B263) (10), from mast clevis tool (B165) (19).

14. Remove upper bracket (19) from holder (20).

15. Slide holder (20) down mast (22) and lift out cone set (21). Slide holder (20) off mast (22).


HOIST
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3
FWD
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VIEW LOOKING UP
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10
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GO TO NEXT PAGE

6-3-6 INSTALL TRANSMISSION (CONT)

NOTE

Remove protective covers, plugs and barrier material before connecting lines and installing components.

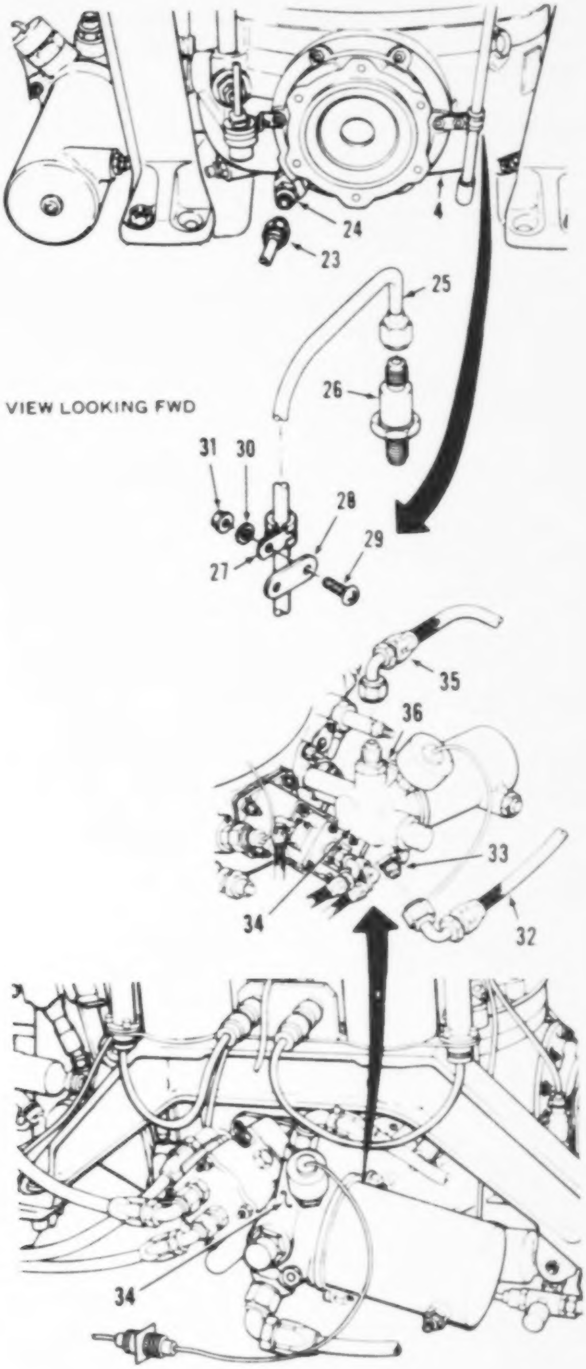
16. Connect freewheeling unit oil line (23), to fitting (24) on transmission (4).

17. Connect breather line (25) to breather (26) on transmission (4).

18. Install clamp (27) to adapter (28) with screw (29), washer (30) and nut (31).

19. Connect oil filter outlet line (32) to fitting (33) on oil filter manifold (34).

20. Connect oil filter inlet line (35) to fitting (36) on oil filter manifold (34).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VIEW LOOKING FWD
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406040-311A

GO TO NEXT PAGE

6-3-6 INSTALL TRANSMISSION (CONT)

21. Install mast torque temperature sensor (37) with clamp (38) on bracket (39) using bolt (40) washer (41) and nut (42). Torque nut (42) **12—15 INCH-POUNDS.**

INSPECT

22. Connect electrical connector (43) to lower transmission chip detector (44).

23. Connect transmission oil temperature transducer electrical connector (45) electrical wiring (46) to roof mounted connector (47).

24. Remove cap or plug from case drain hose (48) and elbow (49).

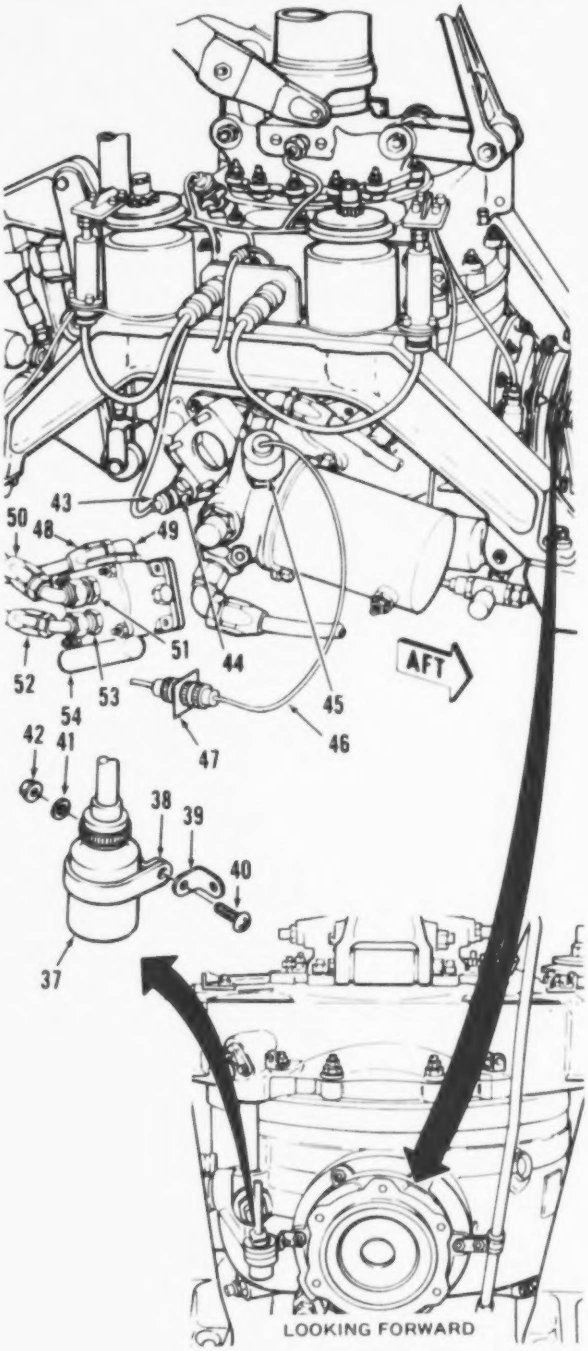
25. Connect case drain hose (48) to elbow (49).

26. Remove cap or plug from suction line hose (50) and union (51).

27. Connect suction line hose (50) to union (51).

28. Remove cap or plug from pressure line hose (52) and union (53).

29. Connect pressure line hose (52) to union (53) on hydraulic pump (54).



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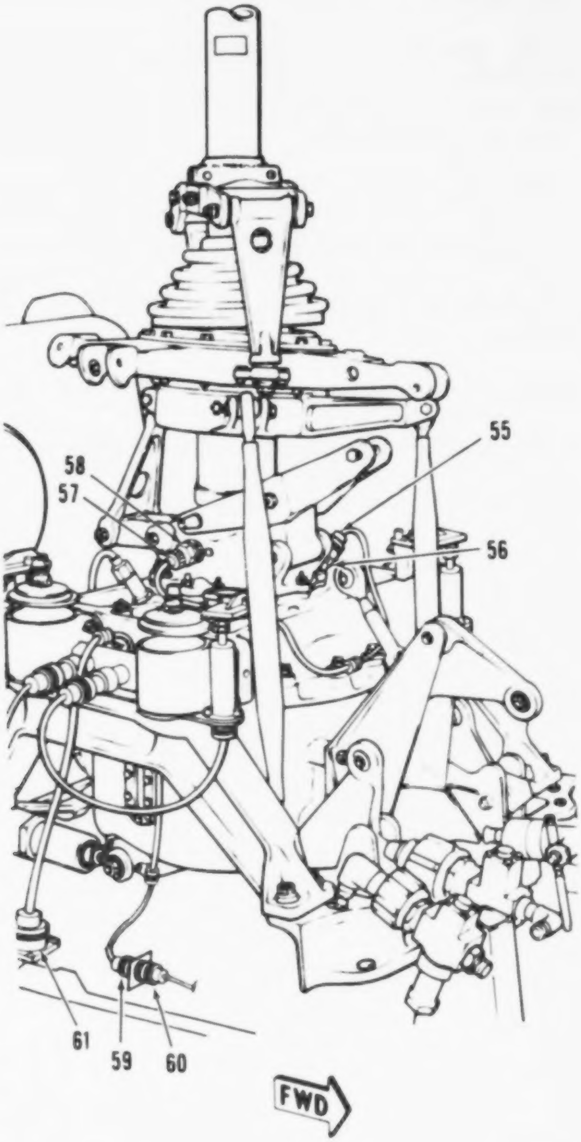
6-3-6 INSTALL TRANSMISSION (CONT)

30. Connect electrical connector (55) to upper transmission chip detector (56).

31. Connect electrical connector (57) to left lower torque transducer (58).

32. Connect electrical connector (59) to particle separator blower connector (60).

33. Connect electrical connector (61) to connector on right side of transmission deck.



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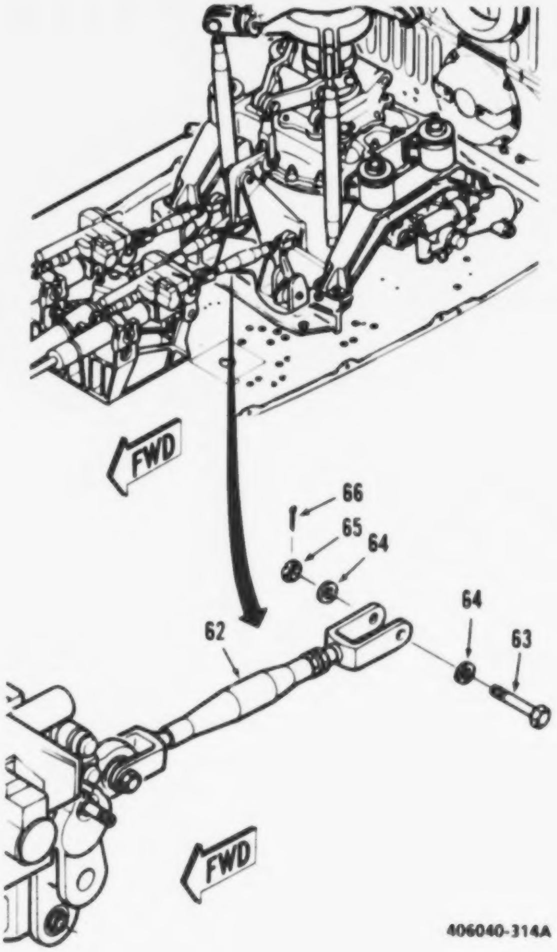
6-3-6 INSTALL TRANSMISSION (CONT)

34. Connect cyclic and collective adjustable tube assemblies (62) using bolt (63), washers (64), nut (65), and cotter pin (66) (Task 11-3-61, 11-3-69, 11-4-39, and 11-4-45).



INSPECT

FOLLOW-ON MAINTENANCE

Install torquemeter support and bearing assembly (Task 6-4-10).

Install mast standpipe (Task 6-4-2)

Install engine to transmission driveshaft (Task 6-2-2).

Install main rotor hub and blades (Task 5-1-2).

Service transmission (Task 1-4-8).

Install air induction cowling (Task 4-2-2).

Install engine cowling (Task 2-1-24).

Install forward fairing assembly (Task 2-1-21).

Static calibration (Task 9-7-13).

Service hydraulic reservoir (Task 7-2-1).

Bleed hydraulic system (Task 1-4-11).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-3-7 REMOVE/INSTALL INPUT PINION MAGNETIC SEAL (AVIM)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Maintenance Platform
Spanner Assembly (B134)
Torque Wrench, 30-150 Inch-Pounds
Torque Wrench, 100-500 Foot-Pounds
Goggles

Parts:

Packing (2)
Nut, Self-locking Steel
Seal, Magnetic

Materials:

Rubber Gloves (D119)
Ultrachem Fluid No. 1 (D60)
Methyl-Ethyl-Ketone (MEK) (D6)
Lubricating Oil (D2 or D3)
Cloth, Low Lint (D56)
Sealing Compound (D20)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Removed (Task 2-1-21)
Air Induction Cowling Removed (Task 4-2-1)
Engine Cowling Removed (Task 2-1-24)
Engine to Transmission Driveshaft Removed (Task 6-2-2)

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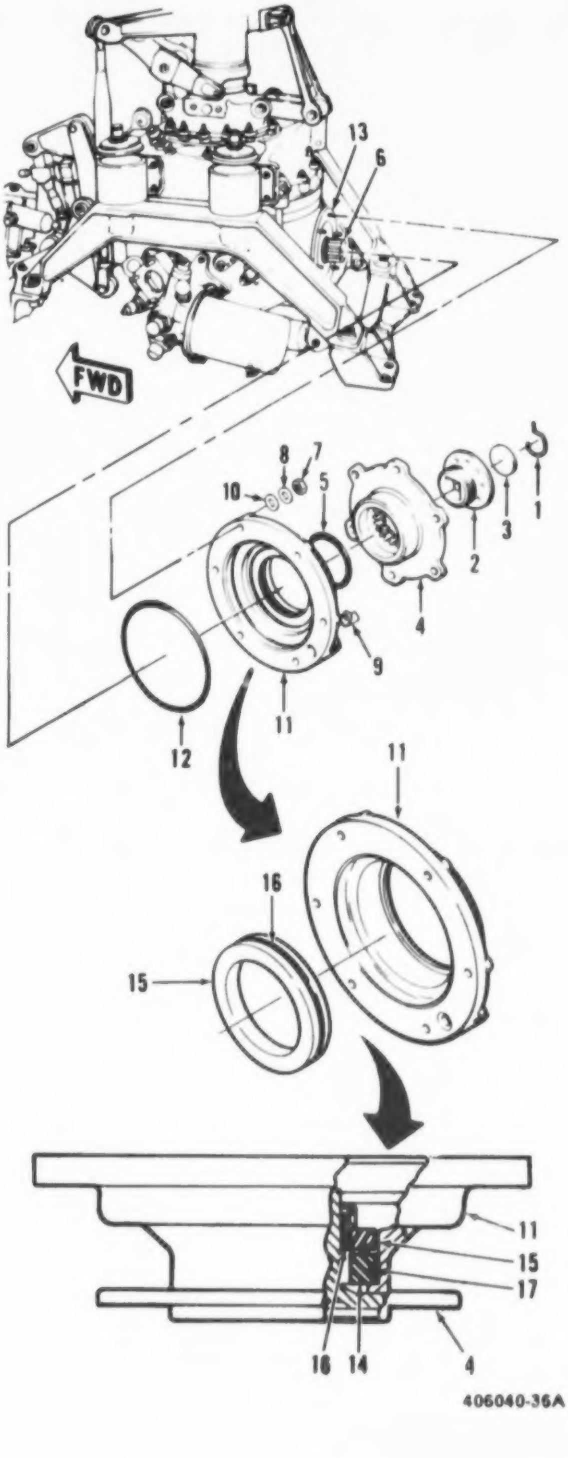
6-3-7. REMOVE/INSTALL INPUT PINION MAGNETIC SEAL (AVIM) (CONT)



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REMOVE MAGNETIC SEAL ASSEMBLY

1. Remove lock spring (1) from input pinion nut (2), and remove cover (3).

2. Remove input pinion nut (2) from pinion adapter (4) using breaker bar with three-quarter inch extension and spanner assembly (B134).

3. Remove adapter (4) and packing (5) from input pinion (6). Discard packing (5).

4. Remove six nuts (7), four steel washers (8), two brackets (9), and six aluminum washers (10) from housing (11).

5. Remove housing (11) and packing (12) from input pinion bearing liner (13). Discard packing (12).

CAUTION

The magnetic ring (14) and seal case (15) are hard and brittle. Application of other than hand pressure can cause cracks which will render the seal unserviceable.

6. Remove seal case (15) with packing (16) and magnetic ring (14) with packing (17).

GO TO NEXT PAGE

INSPECT HOUSING

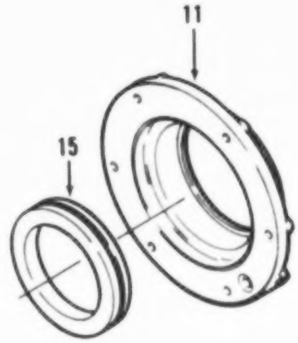
7. Inspect housing (11) being certain seal cavity is free of burrs.

CLEAN HOUSING

WARNING

Methyl-ethyl-ketone (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

8. Clean inside diameter of housing (11) with MEK (D6).



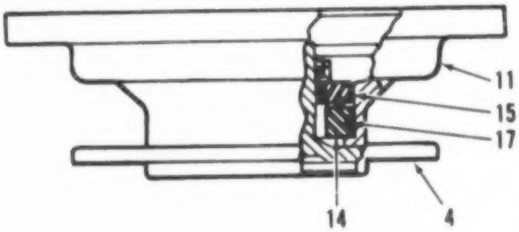
BUILD UP SEAL ASSEMBLY

NOTE

When magnetic seal is removed from packaging, seal case must be separated from magnetic ring. Pull seal case straight away from magnetic ring.

Avoid touching mating surface (highly polished surface) of magnetic ring.

9. Lubricate packing (17) and bore of housing (11). Use a small amount of Ultrachem assembly fluid No. 1 (D60).



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CAUTION

The magnetic ring and seal case are hard and brittle. Application of other than hand pressure can cause cracks which will render the seal unserviceable.

10. Position magnetic ring (14) into bore of magnetic seal housing (11) with mating surface (polished surface) facing up.

GO TO NEXT PAGE

6-3-7. REMOVE/INSTALL INPUT PINION MAGNETIC SEAL (AVIM) (CONT)

11. Cover mating surface with a clean low lint cloth (D56) and hand press magnetic ring (14) squarely into bore of housing (11).

12. Assemble adapter (4) through magnetic ring (14) installed on housing (11), and place assembly face down on adapter (4).

13. Lubricate packing (16) on seal case (15) and outside diameter of adapter (4). Use a small amount of Ultrachem assembly fluid No. 1 (D60).

14. Carefully place seal case (15) over adapter (4) with carbon ring adjacent to magnetic ring (14) and hand press seal case (15) into contact with magnetic ring (14).

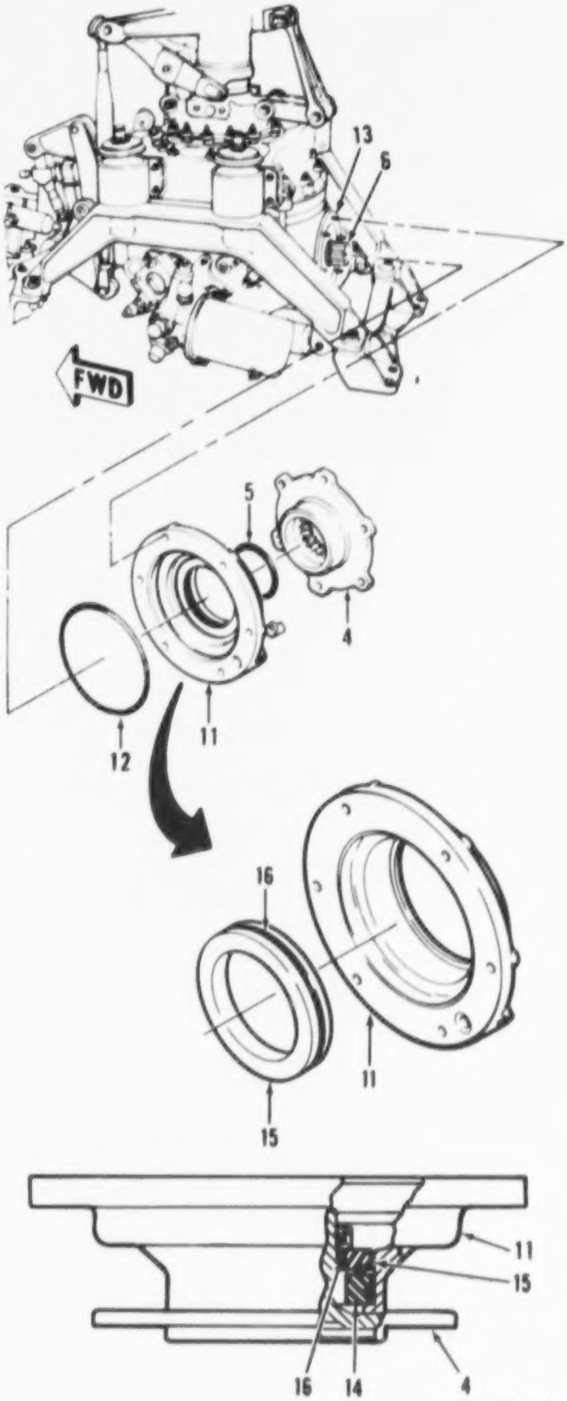
INSTALL

NOTE

Check for proper sealing by pouring a small amount of oil (D2 or D3), as required in transmission being fitted, into housing. If leakage occurs, positive contact has not been achieved between seal mating surfaces, or packing damage has occurred.

15. Install packing (12) in groove of input pinion bearing housing (13).

16. Install packing (5) in groove of input pinion (6), lubricate inner portion of adapter (4), and packing (5) with small amount of Ultrachem fluid (D60).



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6-3-7 REMOVE/INSTALL INPUT PINION MAGNETIC SEAL (AVIM) (CONT)

17. Install magnetic seal (14), housing (11), and adapter assembly (4) on input pinion (6) and input pinion bearing liner (13).

CAUTION

This procedure, if not strictly followed, may result in seal separation and leakage.

18. Hand press adapter (4) onto pinion (6) and packing (5) while guiding housing (11) holes over six studs in transmission, and install six aluminum washers (10), two brackets (9), four steel washers (8), and six nuts (7).

19. Install housing (11) the rest of the way onto studs by tightening nuts, apply sealing compound (D20) around housing, then torque nut (2) **150-166 FOOT-POUNDS**.

20. Install cover (3) in input pinion (6) and secure with lock spring (1).

INSPECT

FOLLOW-ON MAINTENANCE

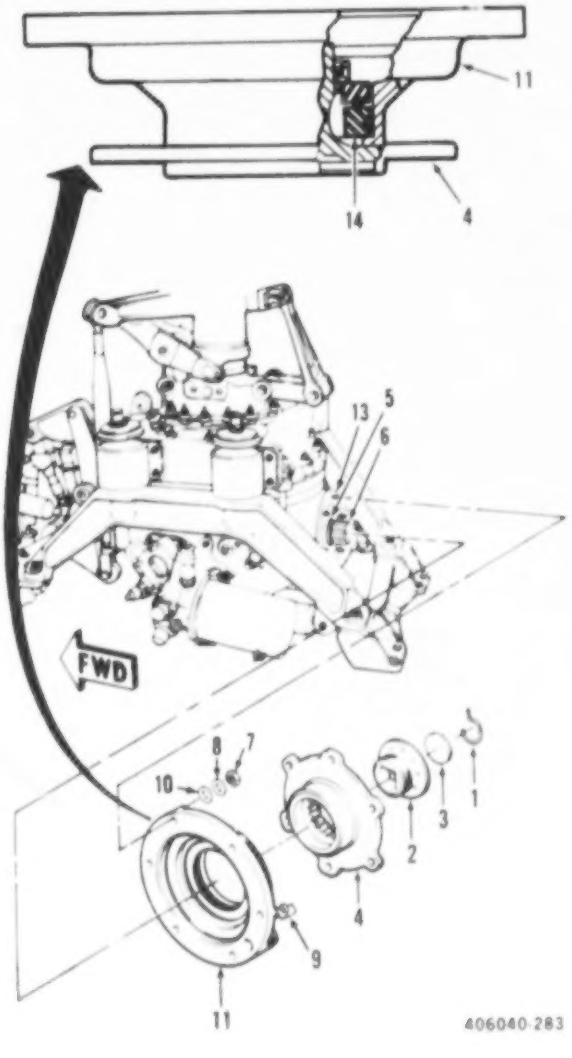
Install engine to transmission driveshaft (Task 6-2-2).

Install engine cowling (Task 2-1-24).

Install air induction cowling (Task 4-2-4).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



END OF TASK

6-3-8 REMOVE/INSTALL UPPER CHIP DETECTOR

This task covers: Removal and installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 30-150 Inch-Pounds
Crowfoot, 1 inch
Wrench, 1 inch

Parts:

Packing

Materials:

Lockwire (D4)
Lubricating Oil (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

6-3-8 REMOVE/INSTALL UPPER CHIP DETECTOR (CONT)

REMOVE

1. Disconnect electrical connector (1) from chip detector (2)

2. Remove lockwire and chip detector housing (2) from transmission (3) Remove and discard packing (4)

INSTALL

3. Install packing (4) on new chip detector (2)

4. Lubricate packing (4) using lubricating oil (D2 or D3)

5. Install chip detector (2) in transmission (3) Torque chip detector (2) **75-125 INCH-POUNDS**

6. Secure chip detector (2) to transmission (3) with lockwire (D4)

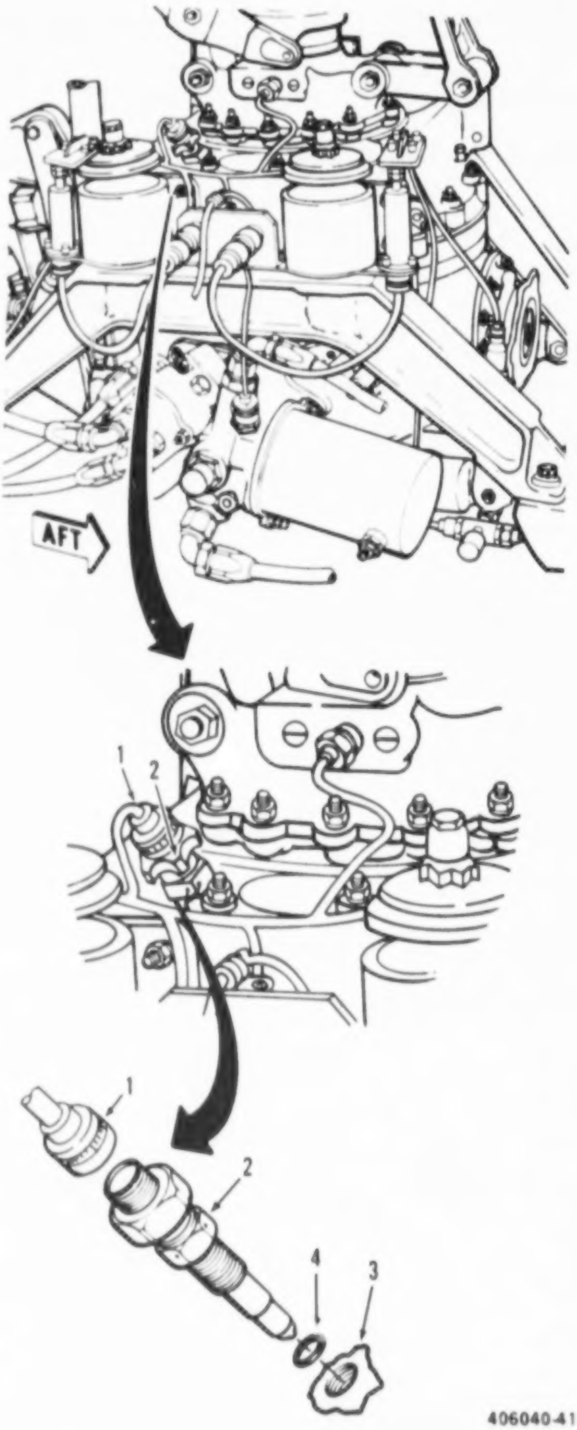
7. Connect electrical connector (1) to chip detector (2)

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check of upper chip detector (Task 9-1-19)

Install forward fairing assembly (Task 1-2-21)



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END OF TASK

6-3-9. REMOVE/INSTALL THERMOSTAT

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Wrench, Open End 1-1/4 Inch
Maintenance Platform

Parts:

Packing

Materials:

Lubricating Oil (D2 or D3)
Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

6-3-9 REMOVE/INSTALL THERMOSTAT (CONT)

REMOVE

1 Remove lockwire (D4) from thermostat (1)

2 Remove thermostat (1) with packing (2) from manifold (3) Discard packing (2)

INSTALL

3 Install thermostat (1) with packing (2) coated with oil (D2 or D3) on oil filter manifold (3)

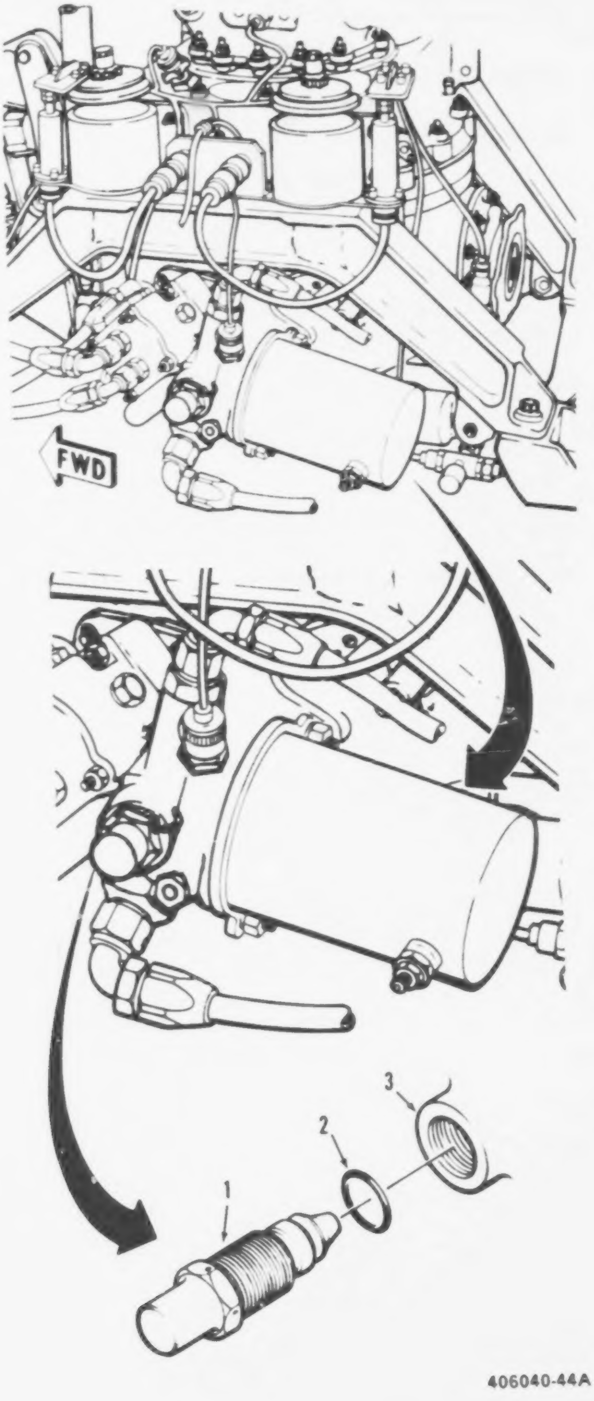
4 Install lockwire (D4) on thermostat (1)

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21)

Pilot perform MOC (TM 55-1520-248-MTF)



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END OF TASK

6-3-10. REMOVE/INSTALL TEMPERATURE TRANSDUCER

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packing

Materials:

Lubricating Oil (D2 or D3)
Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

6-3-10. REMOVE/INSTALL TEMPERATURE TRANSDUCER (CONT)

REMOVE

1. Remove electrical connector (1).

2. Remove lockwire (D4) from temperature bulb (2).

3. Remove temperature bulb (2) with packing (3) from oil filter manifold (4). Discard packing (3).

INSTALL

4. Install temperature bulb (2) with packing (3) on oil filter manifold (4).

5. Install lockwire (D4) on temperature bulb (2).

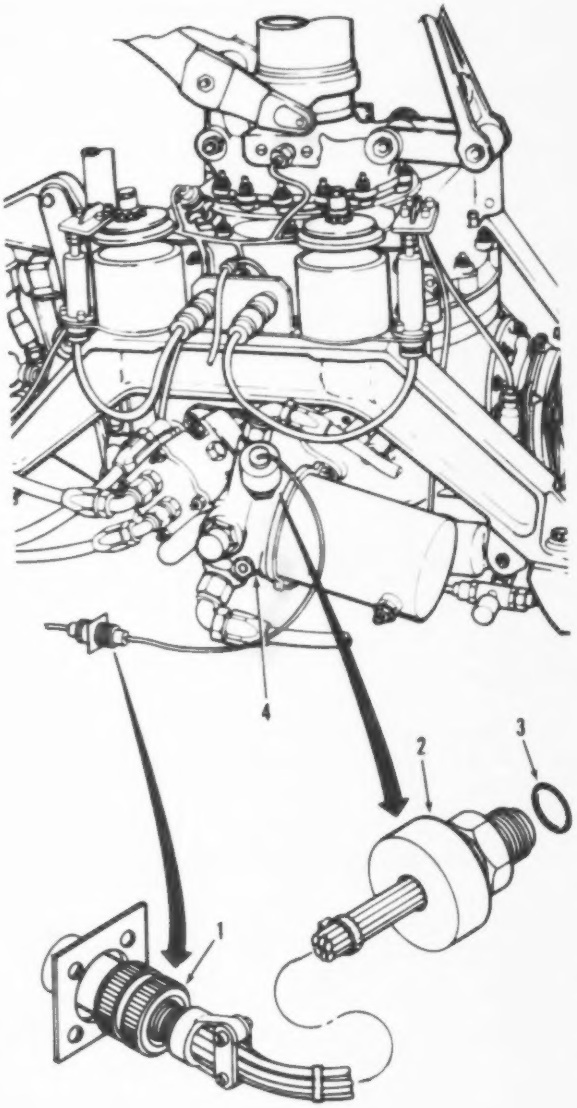
6. Install electrical connector (1).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

6-3-11. REMOVE/INSTALL LOWER CHIP DETECTOR

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packing

Materials:

Lockwire (D4)
Lubricating Oil (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21).

REMOVE

1. Disconnect electrical connector (1) from chip detector (2).

2. Remove screw (3) and lockwire from transmission (4).

3. Remove chip detector (2) from transmission (4). Remove and discard packings (5 and 6).

INSTALL

4. Install packings (5 and 6) on new chip detector (2).

5. Lubricate packings (5) using lubricating oil (D2 or D3)

6. Install new chip detector (2) on transmission (4).

7. Install screw (3) in chip detector (2). Secure with lockwire (D4).

8. Connect electrical connector (1) to chip detector (2).

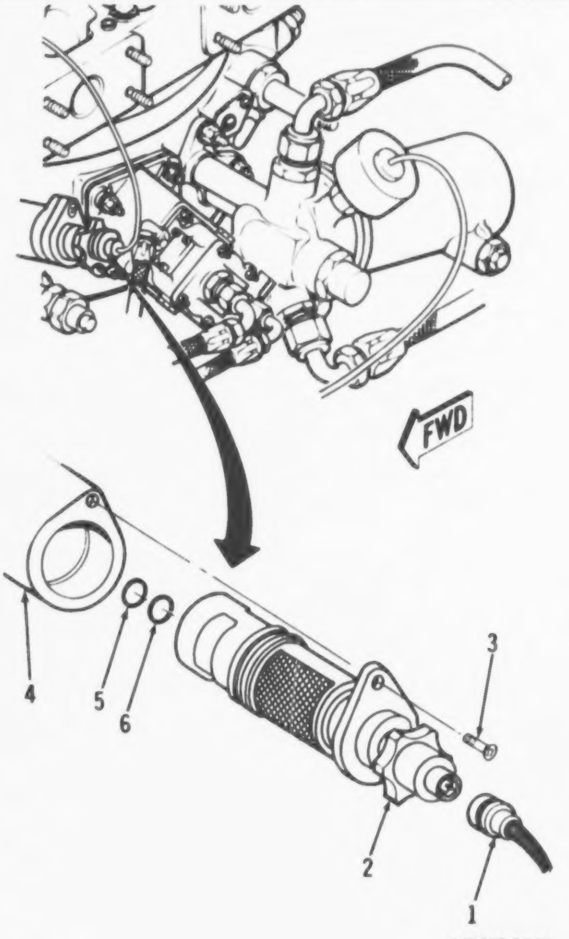
INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (Task 9-1-19).

Install forward fairing assembly (Task 2-1-21).

END OF TASK



6-3-12 REMOVE/INSTALL BREATHER TUBE ASSEMBLY

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 30—150 Inch-Pounds

Parts:

Packing

Materials:

Lockwire (D4)

Personnel Required

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

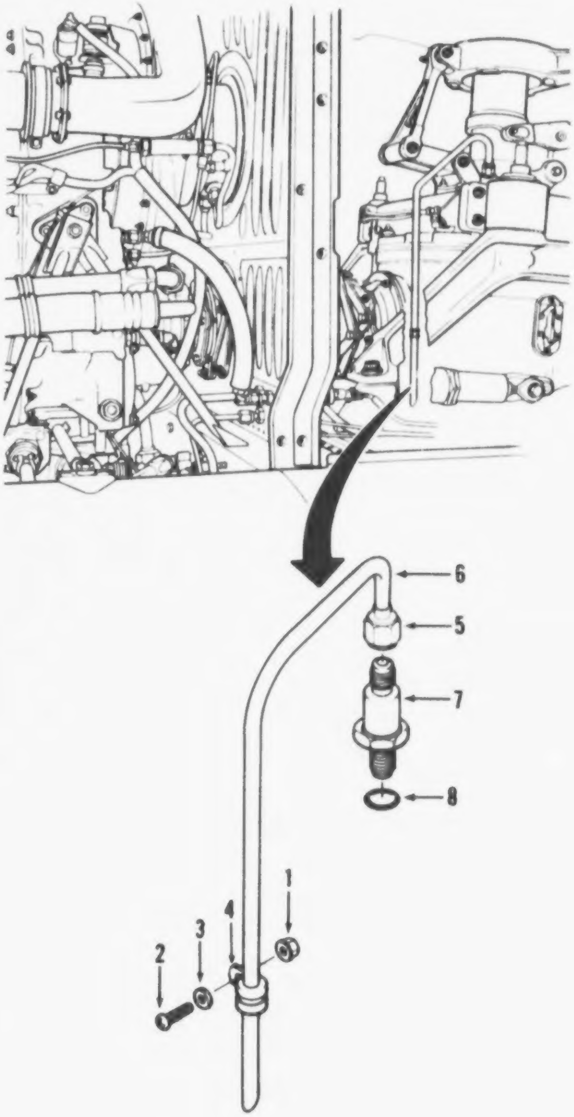
TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

6-3-12. REMOVE/INSTALL BREATHER TUBE ASSEMBLY (CONT)



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REMOVE

1. Remove nut (1), screw (2), washer (3), and clamp (4).

2. Loosen nut (5) and remove breather tube (6).

3. Cut lockwire (D4) and remove breather (7) and packing (8). Discard packing (8).

INSTALL

4. Install breather (7), with packing (8), torque to **75-125 INCH-POUNDS** and lockwire (D4).

5. Place tube (6) in proper position and tighten nut (5).

6. Install clamp (4) on tube (6), install washer (3) on screw (2) and secure with nut (1).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-3-13 REMOVE/INSTALL SIGHT GAGE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Parts:

Gasket

Materials:

Lockwire (D4)
Lubrication Oil (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Transmission Oil Drained (Task 1-4-6)

GO TO NEXT PAGE

6-3-13. REMOVE/INSTALL SIGHT GAGE (CONT)

REMOVE

1. Remove lockwire from sight gage (1).

2. Remove six screws (2) and six washers (3) from OIL LEVEL plate (4) and sight gage (1).

3. Remove OIL LEVEL plate (4), sight gage (1), and gasket (5). Discard gasket (5).

INSTALL

4. Scrape gasket-seat area with plastic scraper and align gasket (5) and sight gage (1) holes.

5. Place washers (3) and screws (2) in top and three bottom holes and tighten finger tight.

6. Place OIL LEVEL plate (4) over the remaining two holes and install remaining two washers (3) and screws (2).

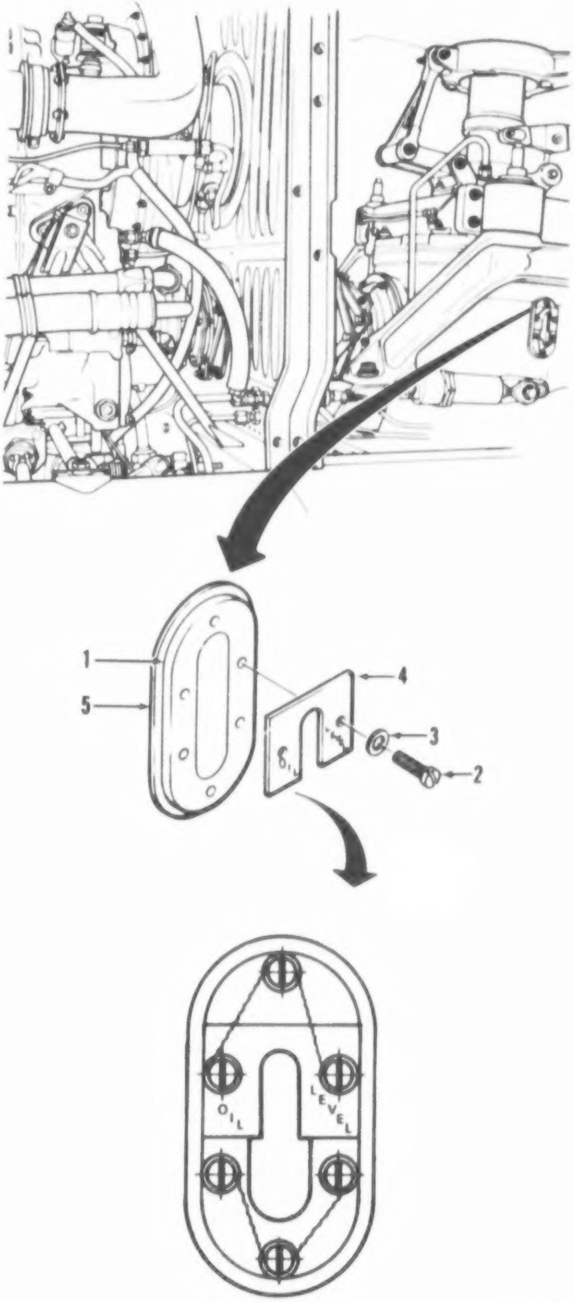
7. Tighten all screws (2) and secure three top screws (2) together and three bottom screws (2) together, using lockwire (D4).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21)

Service transmission oil system (Task 1-4-6)



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END OF TASK

6-3-14. REMOVE/INSTALL AND CLEAN, INSPECT PYLON FITTING ASSEMBLY

This task covers: Removal/installation, cleaning and inspection (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Personnel Required:

67S Scout Helicopter Repairer

References:

TB 43-0103

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Transmission Oil Filter Manifold Removed (Task 6-8-4)

GO TO NEXT PAGE

6-3-14 REMOVE/INSTALL AND CLEAN, INSPECT PYLON FITTING ASSEMBLY (CONT)

REMOVE

1. Remove spring assembly aft bolt (1) by removing cotter key (2), nut (3), and washer (4).

2. Remove four bolts (5 and 6) with four washers (7 and 8) from fitting assembly (9).

3. Remove fitting assembly (9).

4. Reinstall four bolts (5) and (6) and washers (7) and (8) with shim (10) and tighten handtight.

5. Remove forward spring assembly bolt (11), washer (12), and spring assembly (16).

6. Remove three nuts (13) and three washers (14) from fitting assembly (15).

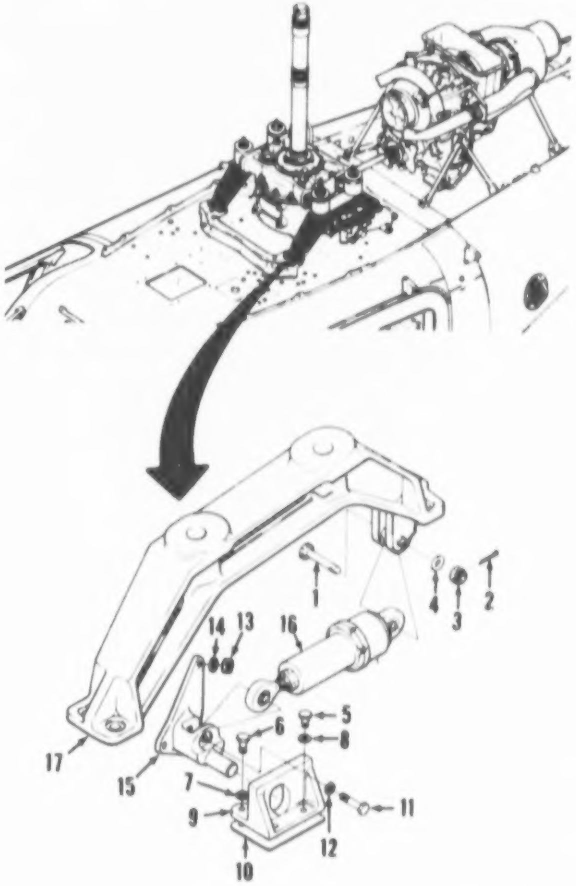
7. Remove fitting assembly (15).

CLEAN

8. Clean fitting (15) using solvent (D1).

INSPECT

9. Fluorescent penetrant inspect fitting assembly (15). Refer to TB 43-0103.



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6-3-14 REMOVE/INSTALL AND CLEAN, INSPECT PYLON FITTING ASSEMBLY (CONT)

INSTALL

10. Install fitting assembly (15) with three washers (14) and three nuts (13).

11. Install forward end of spring assembly (16) in fitting assembly (15) by installing bolt (11) and washer (12).

12. Torque bolt (11) **70—95 INCH-POUNDS.**

13. Install fitting (9) by installing two bolts (5) and washers (8). Torque bolts (5) **70—95 INCH-POUNDS.**

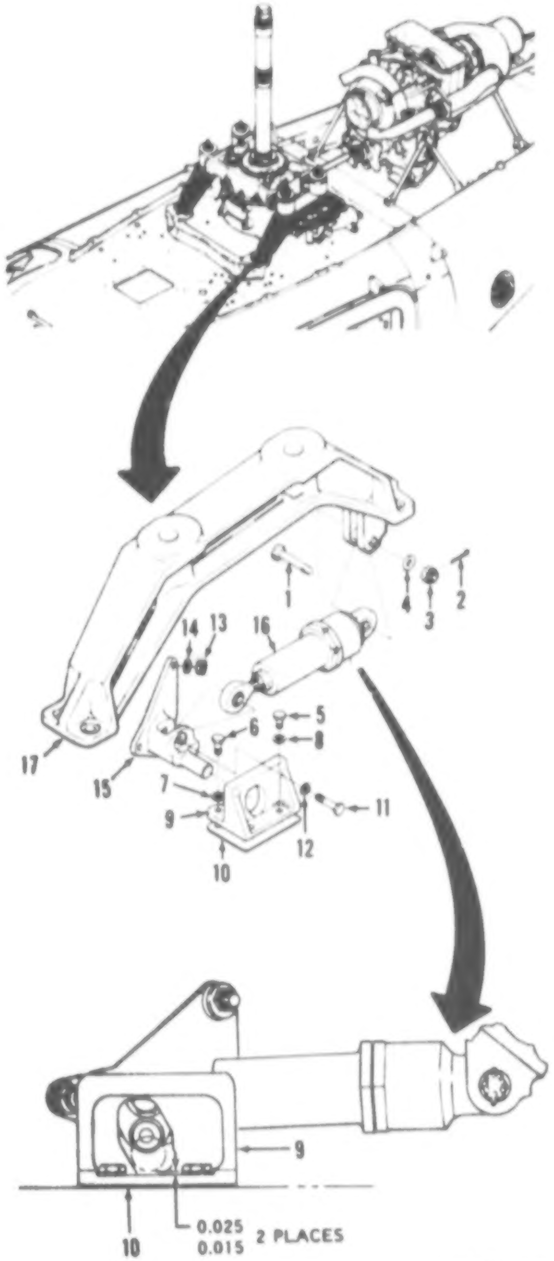
14. Install two bolts (6) and washers (7). Torque bolts (6) **90—110 INCH-POUNDS.**

15. Install aft end of spring assembly (16) in pylon (17) using bolt (1), washer (4), and nut (3). Torque nut (3) **160—190 INCH-POUNDS.**

16. Install cotter key (2) in bolt (1).

NOTE

A gap of 0.015 to 0.025 inch is required at center of pylon stop fitting and transmission deck when transmission and mast assembly is installed, but not hub and blade assembly. This is applicable to left and right side of transmission. Remove or replace shim as needed to obtain required gap.



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INSPECT

FOLLOW-ON MAINTENANCE

Install transmission oil filter manifold (Task 6-8-4).

Service transmission (Task 1-4-6).

END OF TASK

Section IV. STANDPIPE ELECTRICAL ASSEMBLY, TORQUEMETER SYSTEM AND MAIN ROTOR MAST ASSEMBLY

This section contains maintenance procedures for the Standpipe Electrical Assembly, Torquemeter System and Main Rotor Mast Assembly. The maintenance procedures include removal, inspection, run out inspection, disassembly, repair, and installation.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove Standpipe Electrical Assembly	6-4-1	6-81
Install Standpipe Electrical Assembly	6-4-2	6-86
Replace Electrical Connector (Typical) of Standpipe Electrical Assembly	6-4-3	6-90
Remove Torquemeter Support and Bearing Assembly	6-4-4	6-92
Remove/Install Torquemeter Support Bearing Seal	6-4-5	6-94
Remove/Install Torquemeter Support Bearing (AVIM)	6-4-6	6-96
Clean, Inspect, and Repair Components of Torquemeter Support and Bearing Assembly (AVIM)	6-4-7	6-102
Remove/Install Torquemeter Temperature Bulb	6-4-8	6-114
Remove/Install Torque Transducer	6-4-9	6-116
Install Torquemeter Support and Bearing Assembly	6-4-10	6-119
Remove Torquemeter System Anti-Backlash Adapter Assembly	6-4-11	6-122
Clean, Inspect, and Repair Components of Anti-Backlash Adapter Assembly	6-4-12	6-124
Install Torquemeter System Anti-Backlash Adapter Assembly	6-4-13	6-133
Remove Main Rotor Mast Assembly	6-4-14	6-136
Disassemble Main Rotor Mast Assembly (AVIM)	6-4-15	6-138
Clean, Inspect, and Repair Components of the Main Rotor Mast Assembly (AVIM)	6-4-16	6-143
Assemble Main Rotor Mast Assembly (AVIM)	6-4-17	6-159
Install Main Rotor Mast Assembly	6-4-18	6-165

6-4-1. REMOVE STANDPIPE ELECTRICAL ASSEMBLY

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Electronic Equipment Tool Kit
Maintenance Platform
Preload Tool (B163)
Jackscrews (B94)
Torque Wrench, 100-300 Inch-Pounds
Plastic Scraper (Work Aid)

Materials:

Lockwire (D4)
Tape, Electrical (D186)

Personnel Required:

35K Avionic Mechanic
67S Scout Helicopter Repairer (2)

References:

TM 9-1240-778-20

Equipment Condition:

Mast Mounted Sight Removed (TM 9-1240-778-20)
Transmission Oil Drained (Task 1-4-6)

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CAUTION

Lubricating oil shall be drained from transmission (Task 1-4-6) and black boxes in avionics compartment covered with plastic sheet prior to removal of standpipe.

NOTE

Mark transducers for proper location during installation.

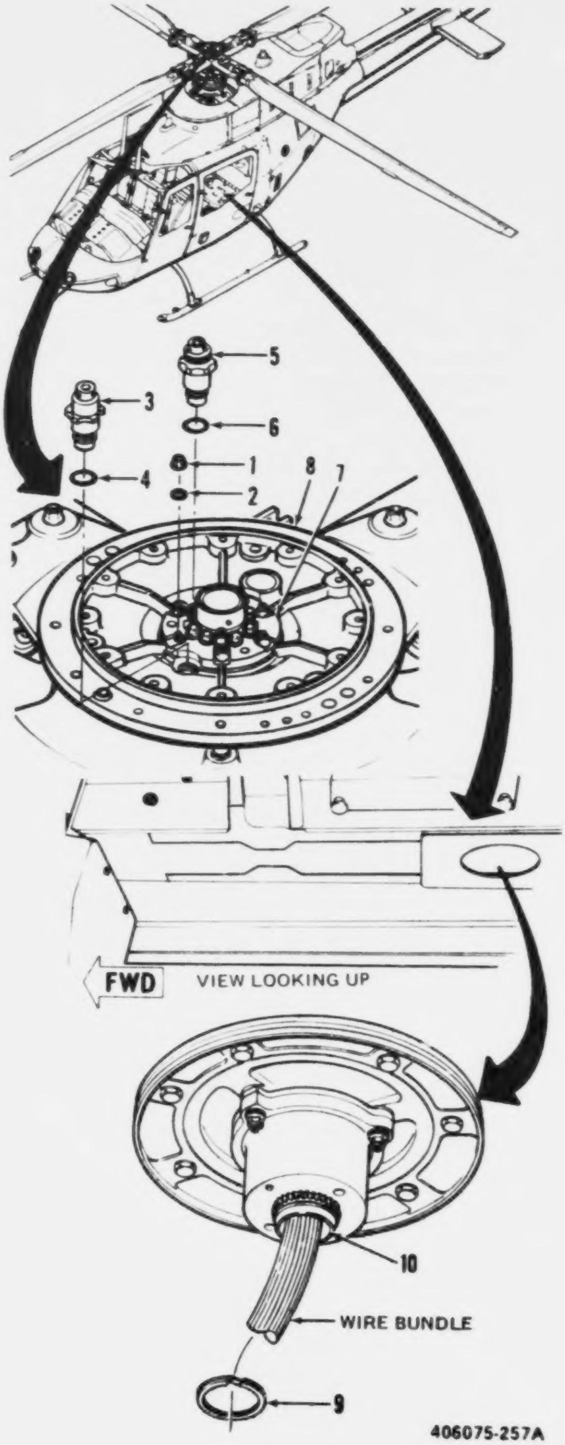
1. Remove six nuts (1) and six washers (2).

2. From top of main rotor mast, remove lockwire and remove transducer (3) with packing (4). Discard packing (4).

3. Remove lockwire and remove transducer (5) with packing (6). Discard packing (6).

4. Remove sealant from adapter (7) and support assembly (8) using plastic scraper.

5. From inside forward avionics compartment remove retainer ring (9) from bottom of standpipe (10).



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6-4-1. REMOVE STANDPIPE ELECTRICAL ASSEMBLY (CONT)

CAUTION

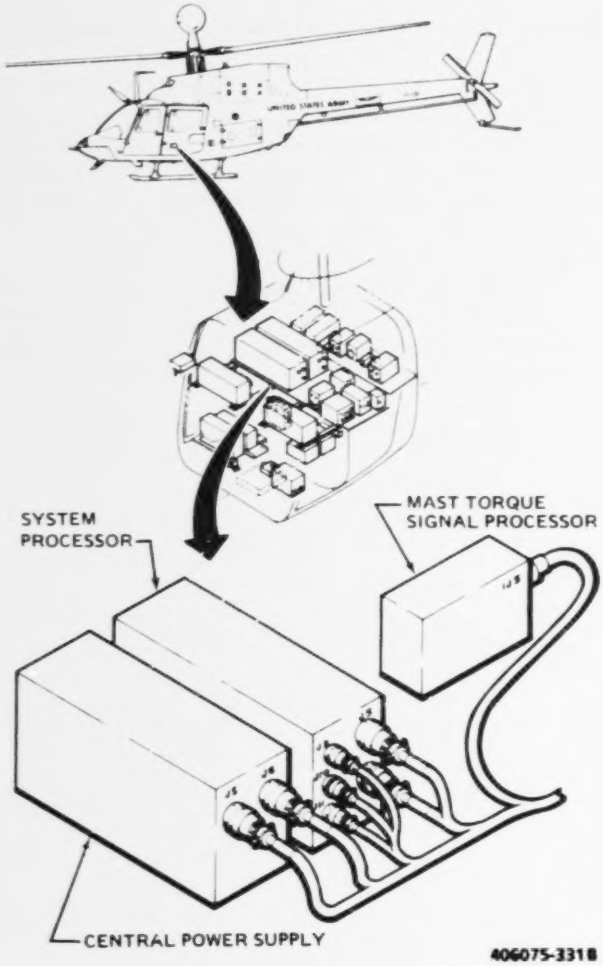
All electrical connectors shall be marked prior to removal. Damage may result if connections are reversed during reinstallation.

6. From inside forward avionics compartment, disconnect electrical cable connectors from system processor junctions J4, J5, J9, J10, and J11, and disconnect ground strap from wire bundle to airframe ground in accordance with TM 9-1240-778-20.

7. Disconnect electrical cable connectors from central power supply junctions J5 and J6.

8. Disconnect electrical cable connector from mast torque signal processor junction J5.

9. Remove ties from cable assemblies to allow nesting of connectors within wire bundle. Wrap electrical leads with slick electrical tape to allow leads to slip through mast.



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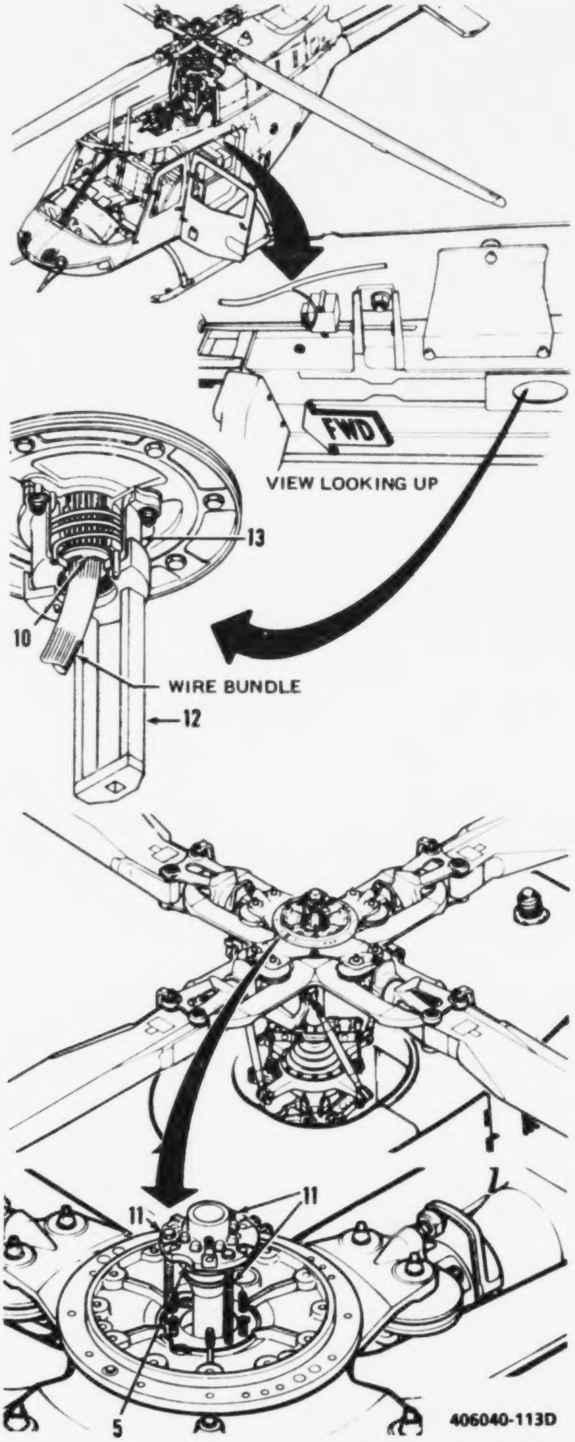
6-4-1. REMOVE STANDPIPE ELECTRICAL ASSEMBLY (CONT)

10. Insert three jackscrews (11) into adapter (5).

11. Release preload on standpipe (10) by inserting preload tool (12) into sleeve (13) through access hole in forward avionics compartment roof, and torque sleeve (13) to **130-150 INCH-POUNDS** counterclockwise, looking up. Apply only enough torque to overcome preload.

12. While holding preload torque on sleeve (13) turn jackscrews (11) evenly, to pull standpipe up until standpipe splines disengage from the sleeve (13), then release the torsional preload on sleeve (13).



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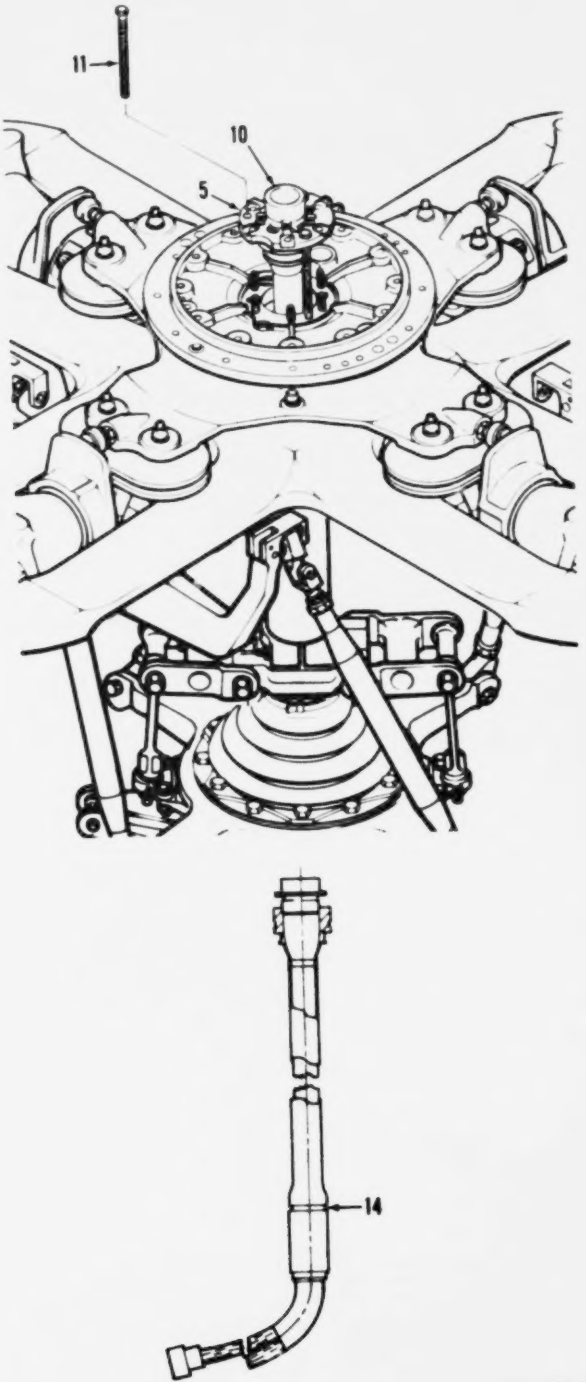
6-4-1. REMOVE STANDPIPE ELECTRICAL ASSEMBLY (CONT)

13. Remove three jackscrews (11) from adapter (5).

14. Remove standpipe (10) and place on suitable surface. Discard packings (14).



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END OF TASK

6-4-2. INSTALL STANDPIPE ELECTRICAL ASSEMBLY

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Electronic Equipment Tool Kit
Maintenance Platform
Preload Tool (B163)
Wrench Assembly
Torque Wrench, 30–150 Inch-Pounds

Parts:

Packing (4)
Nut, Steel, Self-locking

Materials:

Lockwire (D4)
Lockwire (D5)
Sealing Compound (D20)

Personnel Required:

35K Avionic Mechanic
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer (2)

References:

TM 9-1240-778-20

GO TO NEXT PAGE

6-4-2. INSTALL STANDPIPE ELECTRICAL ASSEMBLY (CONT)

1. Nest connectors (1) within wire bundle (2) and wrap with electrical tape to allow wire bundle (2) to fit into mast (3).

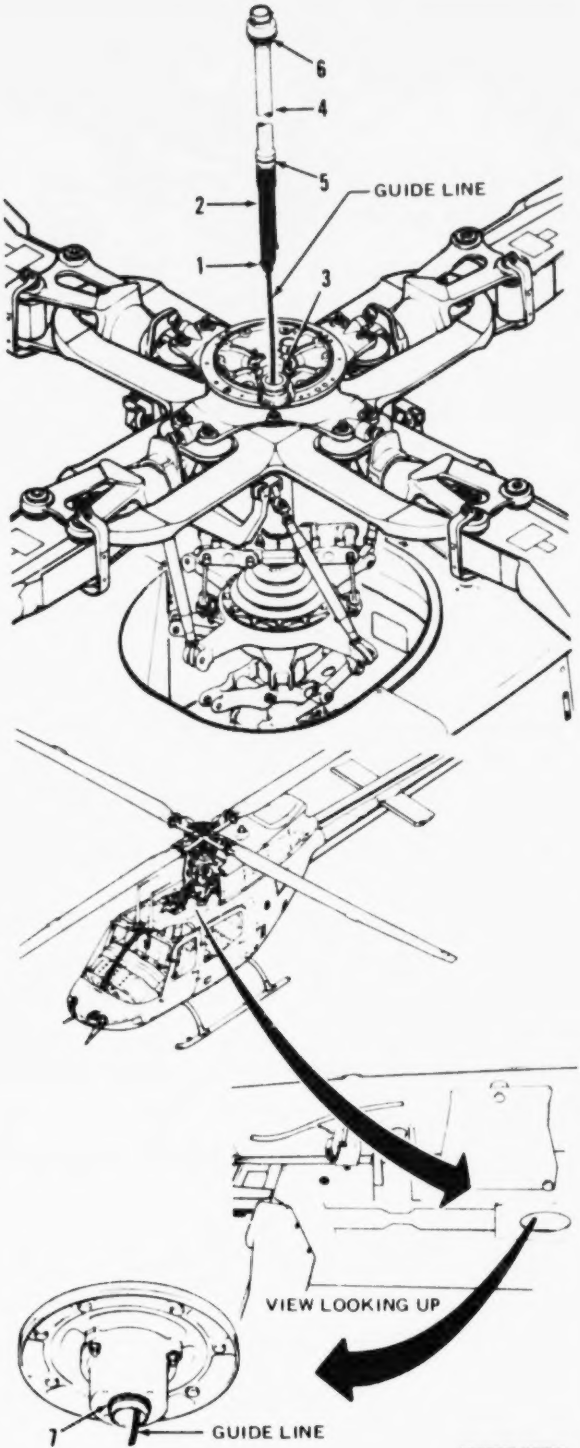
2. On standpipe (4) install new packings (5 and 6).

3. From inside forward avionics compartment, push guide line (lockwire D5) up from bottom of mast (3) and attach to connector (1) to allow wire bundle (2) and standpipe (4) to be pulled through mast (3).

NOTE

Standpipe has master spline which must be orienteu directly forward.

4. Using guide lines, gently pull standpipe electrical assembly (standpipe (4), wire bundle (2)) and connectors (1) through mast (3) until standpipe (4) contacts splines on sleeve (7).



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6-4-2. INSTALL STANDPIPE ELECTRICAL ASSEMBLY (CONT)

5. Insert wrench assembly (8) in forward avionics compartment roof.

NOTE

> Apply torque to sleeve in direction indicated on sleeve assembly.

6. Align splines on standpipe (4) with splines on sleeve (7) by torquing sleeve (7) **130-150 INCH-POUNDS** counterclockwise.

7. Using hand pressure, seat standpipe (4) in mast (9) and through splines on sleeve (7).

8. Remove wrench assembly (8) from sleeve (7).

9. Install retainer ring (10) in groove on bottom end of standpipe (4).

10. Remove electrical tape and guide line from electrical connector (1).

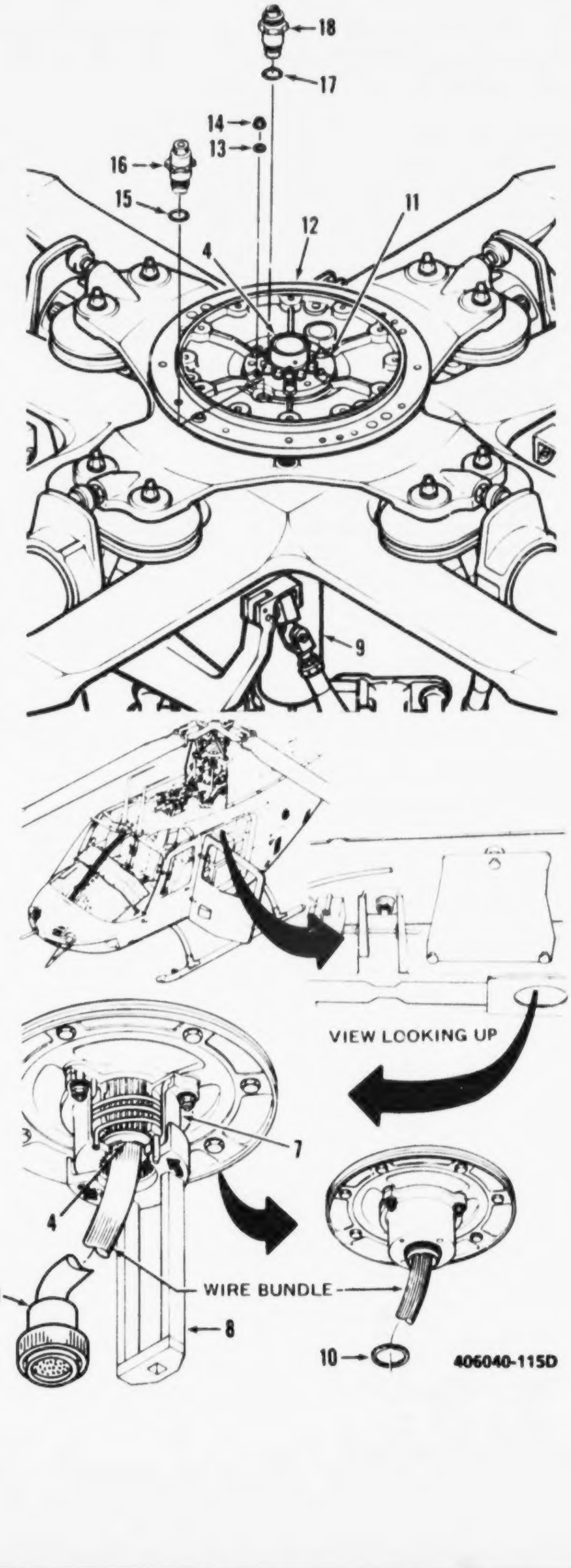
11. Secure adapter (11) to support assembly (12) with six washers (13) and six nuts (14). Torque nuts (14) **75-95 INCH-POUNDS**.

12. Install packing (15) on transducer (16) and install transducer (16) on support assembly (12). Torque transducer (16) **80-100 INCH-POUNDS**.

13. Install packing (17) on transducer (18) and install transducer (18) on support assembly (12). Torque transducer (18) **80-100 INCH-POUNDS**.

14. Apply bead of sealing compound (D20) to outside mating surface of adapter (11) and support assembly (12).

15. Secure transducer (16 and 18) with lockwire (D4).



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6-4-2. INSTALL STANDPIPE ELECTRICAL ASSEMBLY (CONT)

16. Connect standpipe electrical connectors and ground strap in forward AVIONIC compartment in accordance with TM 9-1240-778-20.

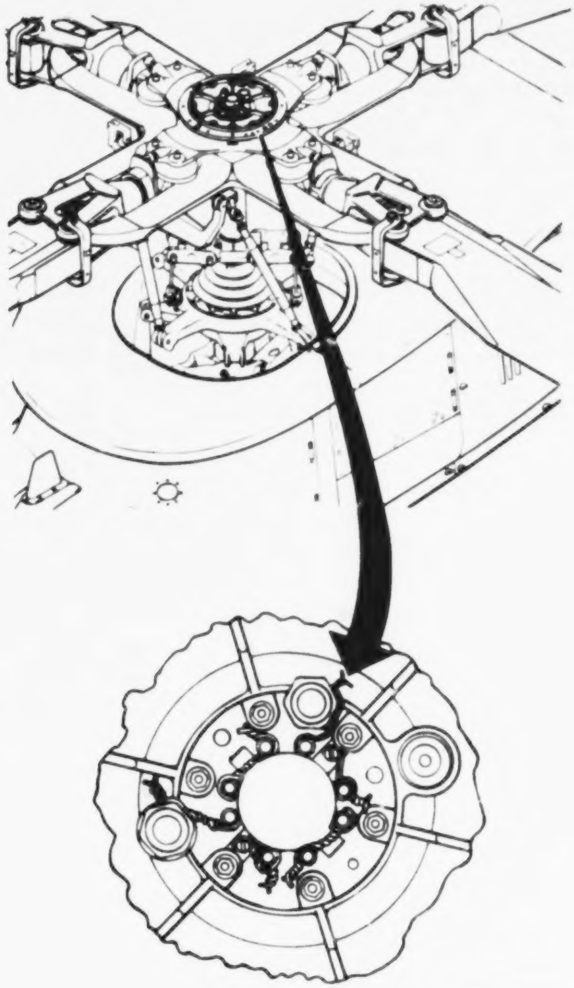
INSPECT

FOLLOW-ON MAINTENANCE

Install mast mounted sight (TM 9-1240-778-20).

Service transmission (Task 1-4-6).

Calibrate mast torque (Task 9-1-11).



END OF TASK

6-4-3. REPLACE ELECTRICAL CONNECTOR (TYPICAL) OF STANDPIPE ELECTRICAL ASSEMBLY

This task covers: Replacement (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electronic Equipment Tool Kit

Personnel Required:

35K Avionic Mechanic
66S Scout Helicopter Technical Inspector

References:

TM 55-1500-323-24

GO TO NEXT PAGE

6-4-3. REPLACE ELECTRICAL CONNECTOR (TYPICAL) OF STANDPIPE ELECTRICAL ASSEMBLY (CONT)

1. Open right access door (1) to gain access to forward avionics compartment.

2. Remove electrical connector (2) from mast mounted sight power supply (3).

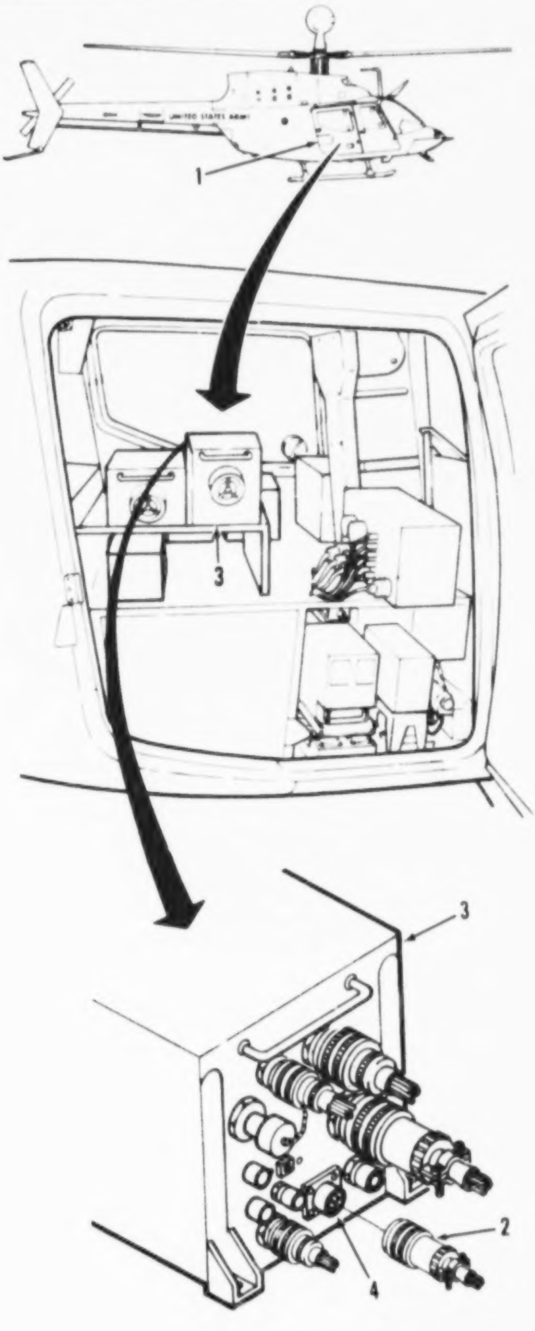
3. Replace connector in accordance with TM 55-1500-323-24.

4. Connect mating electrical connector (2) to connector (4) on mast mounted sight power supply (3).

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check of mast mounted sight (Task 9-1-12)



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END OF TASK

6-4-4. REMOVE TORQUEMETER SUPPORT AND BEARING ASSEMBLY

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Plastic Scraper
Jackscrews (B94)

Materials:

Lockwire (D4)

Personnel Required:

67S Scout Helicopter Repairer (2)

References:

TM 9-1240-778-20

Equipment Condition:

Standpipe Electrical Assembly Removed (Task 6-4-1)
Mast Mounted Sight Removed (TM 9-1240-778-20)

GO TO NEXT PAGE

6-4-4 REMOVE TORQUEMETER SUPPORT AND BEARING ASSEMBLY (CONT)

1. Remove retainer ring (1) from torquemeter support (2) and plug (3).

2. Using jackscrew (B94), remove plug (3) with packing (4) from torquemeter support (2). Discard packing (4).

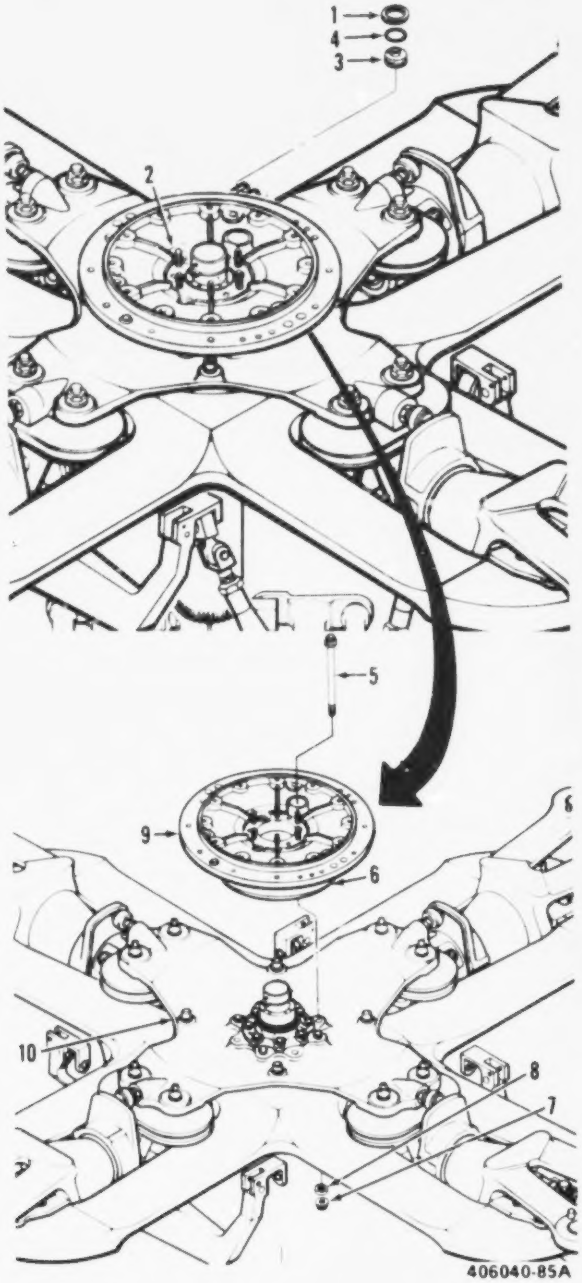
NOTE

> The four correct bolts may be located by laying a straight edge from center of hub to the blade bolt, or trailing edge bolt of the main rotor blade. The torquemeter adapter bolt adjacent to straight edge, as viewed through inspection hole, is correct bolt to remove.

3. Position inspector hole over the four bolts (5) installed through bearing sleeve (6).

4. Remove four nuts (7), four washers (8), and four bolts (5).

5. Remove torquemeter support (2) and bearing assembly (9) from main rotor hub (10).



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END OF TASK

6-4-5. REMOVE/INSTALL TORQUEMETER SUPPORT BEARING SEAL

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit

Parts:

Seal
Packing (2)

Materials:

Crocus Cloth (D8)
Wiping Rag (D53)
Drycleaning Solvent (D1)
Gloves, Rubber (D119)

Personnal Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

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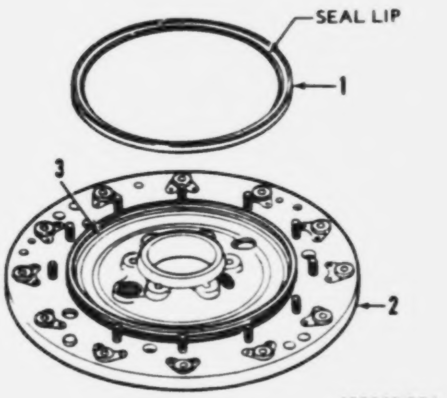
6-4-5. REMOVE/INSTALL TORQUEMETER SUPPORT BEARING SEAL (CONT)



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REMOVE SEAL

1. Remove seal (1) from torquemeter support (2). Discard seal (1).

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

2. Clean seal area (3) of torquemeter support with solvent (D1). Dry with wiping rag (D53).

INSPECT

3. Inspect torquemeter support (2) in seal area for burrs and scratches.

REPAIR

4. Remove burrs and scratches with crocus cloth (D8).

INSTALL SEAL

5. Position seal (1) on torquemeter support (2) and use plastic mallet to lightly tap seal (1) in place.

INSPECT

END OF TASK

6-4-6. REMOVE/INSTALL TORQUEMETER SUPPORT BEARING (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Plastic Scraper (Work Aid)
Jackscrews (B94)
Arbor Press
Steel Sleeve, 5 Inches Long, I.D. 6.570 Inches Minimum, O.D. 7.320 Inches Maximum (Work Aid)
Torque Wrench, 30–150 Inch-Pounds
Goggles
Steel Support, 3 Inches High, I.D. 7.55 Inches, O.D. 8.50 Inches (Work Aid)

Parts:

Shims
Packing (2)

Materials:

Zinc Chromate Primer (D80)
Lockwire (D4)
Sealing Compound (D20)
Grease (D15)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-4-6 REMOVE/INSTALL TORQUEMETER SUPPORT BEARING (AVIM) (CONT)

PREPARE

1. Place torquemeter support and bearing assembly (1) on maintenance bench.

2. Using plastic scraper remove sealant from torquemeter support (2) and bearing assembly (3) mating surface.

DISASSEMBLE

3. Remove 11 nuts (4) and 11 washers (5) from 11 studs (6) on torquemeter support (2).

4. Cut lockwire and remove inspection bolt (7) with packing (8). Discard packing (8).

5. Using jackscrews (B94), remove torquemeter support (2) with packing (9). Discard packing (9).

6. Cut lockwire and remove eight bolts (10) with eight washers (11) from bearing retainer (12).

7. Remove bearing retainer (12) from bearing assembly (3).

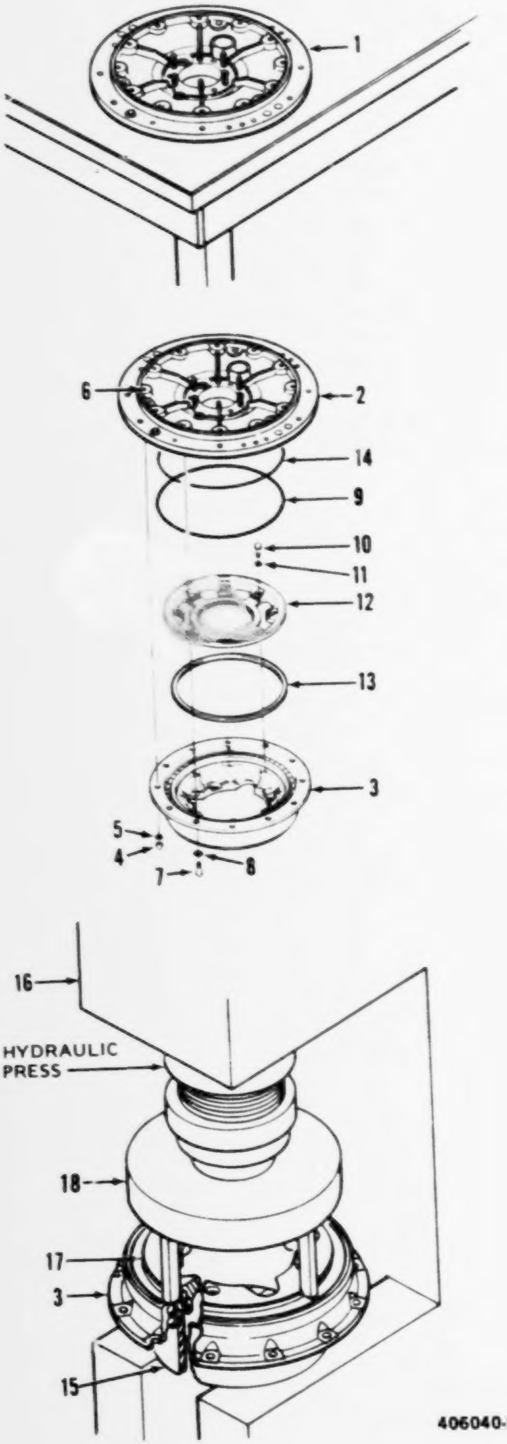
8. Remove shim (13) from bearing assembly (3).

9. Remove seal (14) from torquemeter support (Task 6-4-5).

REMOVE

10. Place bearing assembly (3) on suitable support (15) on arbor press (16).

11. Press bearing assembly (3) from bearing sleeve (17), using suitable pressing sleeve (18).



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6-4-6. REMOVE/INSTALL TORQUEMETER SUPPORT BEARING (AVIM) (CONT)

INSTALL

WARNING

> Zinc Chromate primer (D80) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

12. Apply wet zinc chromate primer (D80) to bearing mating surface of bearing sleeve (17).

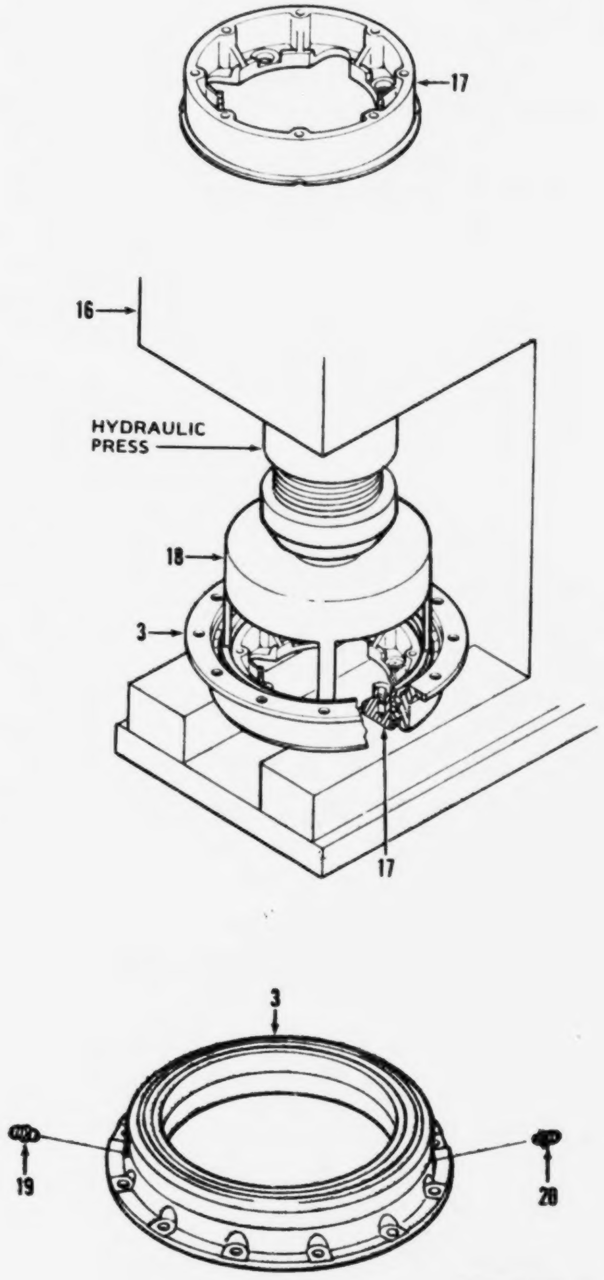
13. Place bearing assembly (3) on arbor press (16). Position bearing sleeve (17) on bearing assembly (3).

14. Using suitable pressing sleeve (18), press bearing sleeve (17) into bearing assembly (3).

INSPECT

15. Remove grease fittings (19 and 20) from unserviceable bearing assembly (3).

16. Install grease fittings (19 and 20) on serviceable bearing assembly (3).



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6-4-6. REMOVE/INSTALL TORQUEMETER SUPPORT BEARING (AVIM) (CONT)

SHIMMING PROCEDURE

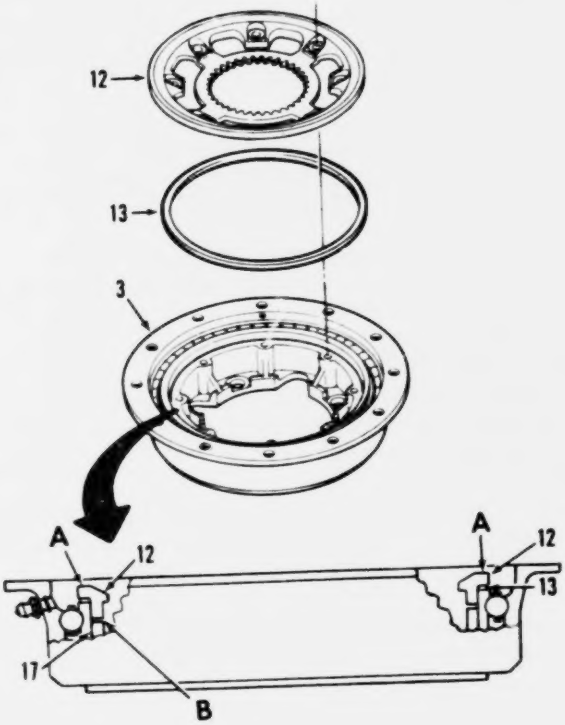
17. Set beginning thickness of shim (13) at 0.090-0.093 inch.

18. Install shim (13) on bearing assembly (3).

19. Install bearing retainer (12) on bearing assembly (3) and against shim (13). Seat shim (13) by applying pressure at area A of bearing retainer (12).

20. Measure gap B between bearing retainer (12) and bearing sleeve (17) through openings (four places) in bearing retainer (13) with feeler gage.

21. Subtract measured gap B from beginning shim (13) measurement (0.090-0.093 inch) and add 0.001-0.003 inch shim to provide a 0.001-0.003 pinch fit on bearing assembly (3).



406040-92B

GO TO NEXT PAGE

6-4-6. REMOVE/INSTALL TORQUEMETER SUPPORT BEARING (AVIM) (CONT)

ASSEMBLE

22. Remove bearing retainer (12) and add required shims (13).

WARNING

Zinc chromate primer (D80) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

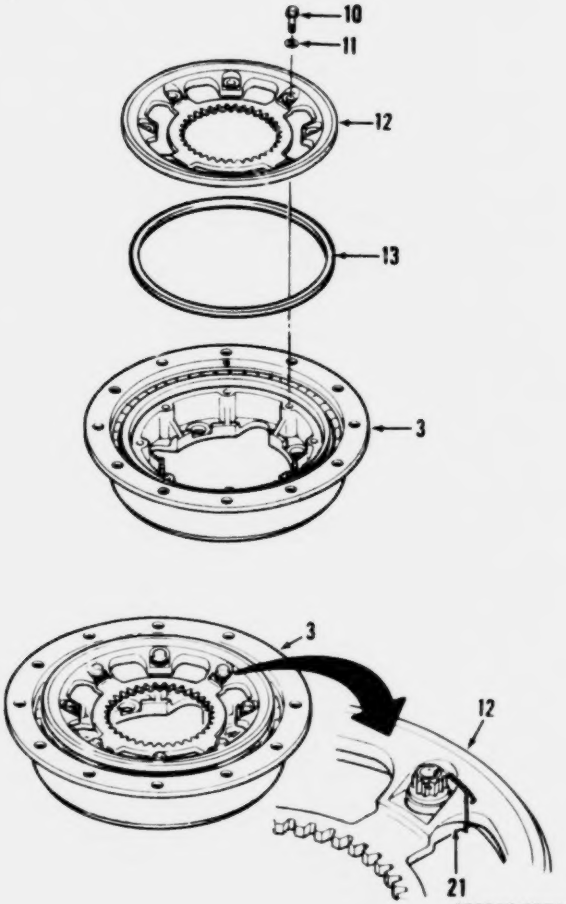
23. Apply wet zinc chromate primer (D80) to mating surface of bearing retainer (12) and install bearing retainer (12) in bearing assembly (3).

24. Install eight washers (11) and eight bolts (10). Torque bolts (9) **60-70 INCH-POUNDS**.

CAUTION

Failure to lockwire bolts to retainer as instructed may cause damage to support.

25. Secure bolts (10) to retainer (12) with lockwire (D4). Bend ends of lockwire (D4) into pockets (21) of retainer (12) to provide clearance for main rotor hub bolts.



406040-267A

GO TO NEXT PAGE

6-4-6 REMOVE/INSTALL TORQUEMETER SUPPORT BEARING (AVIM) (CONT)

INSPECT

INSTALL TORQUEMETER SUPPORT

26. Install seal (Task 6-4-5)

27. Install packing (9) on torquemeter support (2). Lightly lubricate packing (9) with grease (D15) and install torquemeter support (2) on bearing assembly (3).

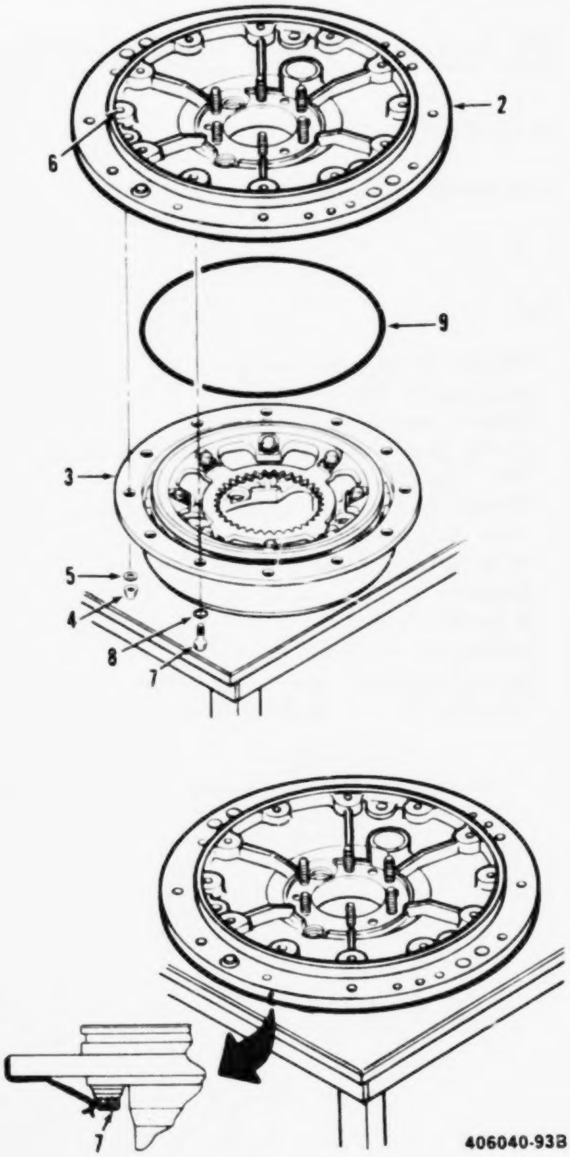
28. Install 11 washers (5) and 11 nuts (4) on 11 studs (6) of torquemeter support (2). Torque nuts (4) **75-95 INCH-POUNDS**.

29. Install inspection bolt (7) with packing (8) into bearing assembly (3). Torque bolt (7) **75-95 INCH-POUNDS**.

30. Secure bolt (7) to torquemeter support (2) with lockwire (D4).

INSPECT

31. Apply bead of sealing compound (D20) at mating surface of torquemeter support (2) and bearing assembly (3).



406040-93B

END OF TASK

6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM)

This task covers: **Cleaning, Inspection, and Repair (Off Helicopter)**

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Powertrain Repairer Tool Kit
- Gage Depth, Dial Indicating
- Caliper, Vernier
- Caliper Set, Micrometer, Outside 0–6 Inches
- Dial Indicator, 0–0.200 Inches
- Caliper, Micrometer, Inside 2-12 Inches
- Hose, Nonmetallic
- Gage Set, Telescoping, 5/16–6 Inches
- Goggles
- Spray Gun, Paint
- Respirator, Air Filtering
- Separator, oil and water, spray Gun
- Compressor Unit, Reciprocating

Materials:

- Abrasive Pads (D24)
- Drycleaning Solvent (D1)
- Wiping Rags (D53)
- Sandpaper 400 Grit (D11)
- Crocus Cloth (D8)
- Chemical Conversion Coating (D12)
- Polyamide Epoxy Primer (D13)
- Paint Remover (D101)
- Gloves, Rubber (D119)
- Black Acrylic Lacquer (D104)
- Steel Wool (D57)

Personnel Required:

- 66S Scout Helicopter Technical Inspector
- 68D Aircraft Powertrain Repairer

References:

TM 43-0103

GO TO NEXT PAGE

6-4-7. CLEAN, INSPECT AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)

CLEANING TORQUEMETER SUPPORT ASSEMBLY

WARNING

Drycleaning solvent (D1) and paint remover (D101) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean torquemeter support with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry torquemeter support assembly with a clean wiping rag (D53).

3. Remove epoxy polyamide primer finish with paint remover (D101).

INSPECT TORQUEMETER SUPPORT ASSEMBLY

4. Fluorescent penetrant inspect torquemeter support assembly in accordance with TM 43-0103.

5. Inspect torquemeter support to damage limits shown. Reject torquemeter support if limits are exceeded.

REPAIR TORQUEMETER SUPPORT ASSEMBLY

6. Repair damage to torquemeter support assembly using sandpaper (D11).

7. Blend repaired area into surrounding area with crocus cloth (D8).

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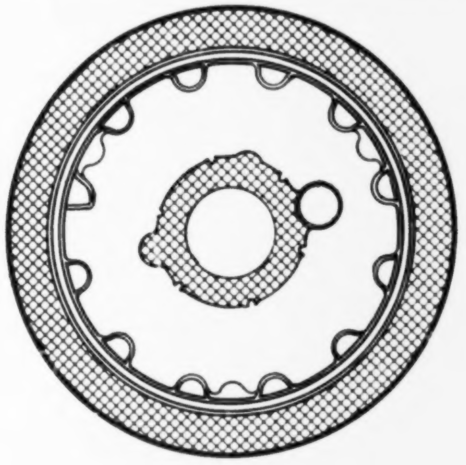
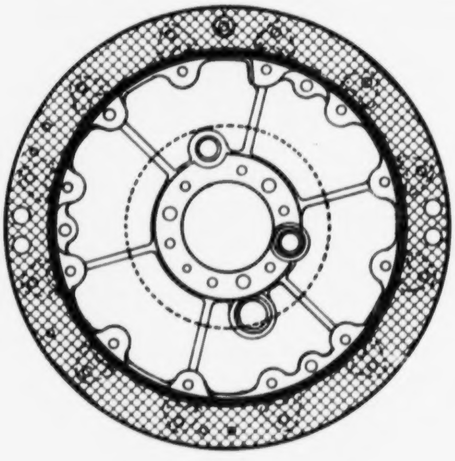
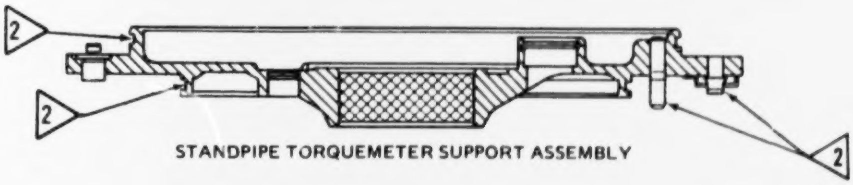
6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)



BOTTOM VIEW



TOP VIEW



STANDPIPE TORQUEMETER SUPPORT ASSEMBLY

	DAMAGE LOCATION SYMBOLS	
	▨	☐
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	0.005 In. before and after repair	0.010 In. before and after repair
CORROSION	0.003 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.5 Sq. in.	1.0 Sq. in.
NUMBER OF REPAIRS	2	4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.

NOTES:

1. No cracks are permitted.

2▷ No corrosion permitted around stud threads, nutplates, or o-ring grooves.

406040-94-1C

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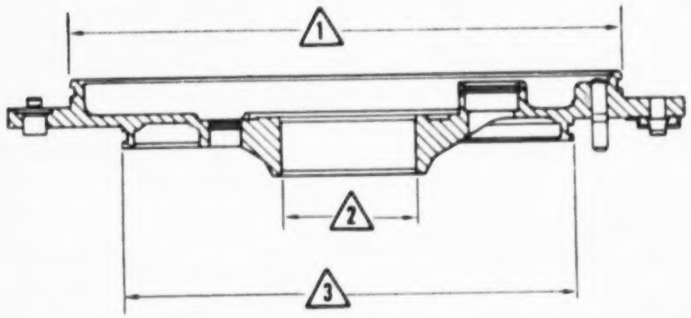
6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)



TORQUEMETER SUPPORT ASSEMBLY

WEAR LIMITS

AREA	MINIMUM	MAXIMUM	REPLACE
1	9.148 IN. DIA.		9.146 IN. DIA.
2		2.252 IN. DIA.	2.254 IN. DIA.
3	7.496 IN. DIA.		7.495 IN. DIA.

406040-94-2A

GO TO NEXT PAGE

6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)

WARNING

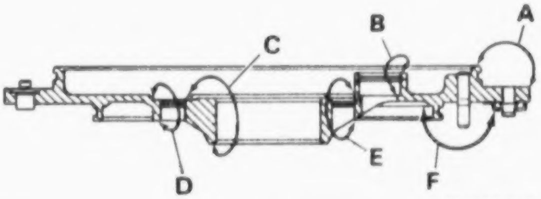
Polyamide epoxy primer (D13) and chemical conversion coating (D12) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

8. Apply chemical conversion coating (D12) to surface of torquemeter support assembly.

NOTE

Polyamide epoxy primer should be omitted from areas A, B, C, D, E and F of torquemeter support.

9. Apply one coat of epoxy polyamide primer (D13) to surface of torquemeter support assembly.



406040-958

6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)

CLEAN BEARING ASSEMBLY RETAINER

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

10. Clean bearing assembly retainer with a wiping rag (D53) dampened with drycleaning solvent (D1).

11. Dry bearing assembly retainer with a clean wiping rag (D53).

INSPECT BEARING ASSEMBLY RETAINER

12. Fluorescent penetrant inspect bearing assembly retainer in accordance with TM 43-0103.

13. Inspect bearing assembly retainer to limits shown. Reject bearing assembly retainer if limits are exceeded.

REPAIR BEARING ASSEMBLY RETAINER

14. Repair damage to bearing assembly retainer using sandpaper (D11).

15. Blend repaired area into surrounding area with crocus cloth (D8).

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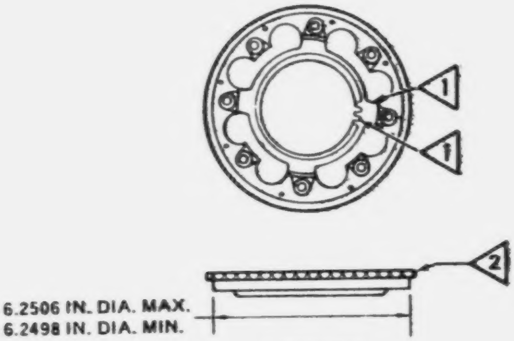
6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)



RETAINER

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▩	▭
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	None	0.005 In. before and after repair
CORROSION DAMAGE	Only that which is removable with steel wool (D57) or abrasive pads (D24).	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	None	0.50 Sq. in.
NUMBER OF REPAIRS	None	6
EDGE CHAMFER TO REMOVE DAMAGE	None	0.030 In.

NOTES:

▷1 The upper edges of the spline teeth and leading edges of the four spokes are limited to 0.003 inch maximum edge break to obtain a sharp output spike from the magnetic pickups. No alteration of edge break is permitted for removal of damage. Repair all areas other than edge break to limits shown.

▷2 Seal contact wear allowable is 0.002 inch maximum on diameter.

3. No cracks permitted.

406040-117B

GO TO NEXT PAGE

6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)

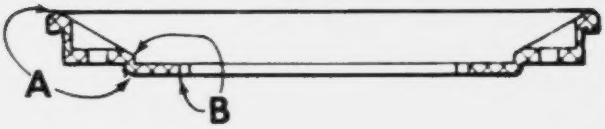
WARNING

Polyamide epoxy primer (D13) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

NOTE

Polyamide epoxy primer should be omitted from areas A and B of bearing assembly retainer.

16. Apply one coat of epoxy polyamide primer (D13) to surface of bearing assembly retainer.



RETAINER

406040-96A

CLEAN BEARING ASSEMBLY

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

17. Clean exterior of bearing assembly with a clean wiping rag (D53) dampened with drycleaning solvent (D1).

18. Dry bearing assembly with a clean wiping rag (D53).

INSPECT BEARING ASSEMBLY

19. Inspect bearing assembly to damage limits shown. Reject bearing assembly if limits are exceeded.

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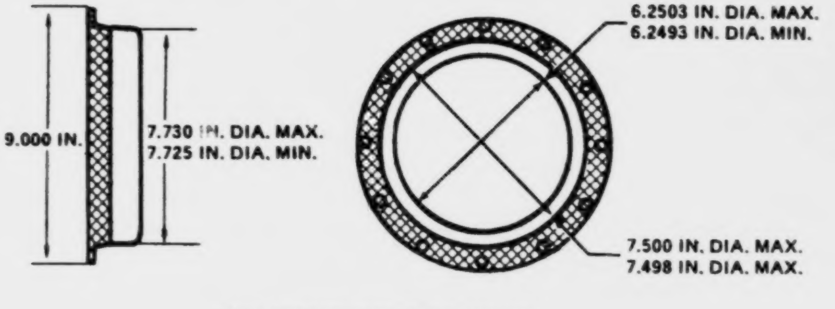
6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)


9.000 IN.
7.730 IN. DIA. MAX.
7.725 IN. DIA. MIN.
6.2503 IN. DIA. MAX.
6.2493 IN. DIA. MIN.
7.500 IN. DIA. MAX.
7.498 IN. DIA. MAX.

BALL DUPLEX SUPPORT BEARING

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	▨ MAXIMUM DAMAGE AND REPAIR DEPTH	▭
MECHANICAL DAMAGE	0.003 In. before and after repair	0.006 In. before and after repair
CORROSION DAMAGE	Only that which can be removed with steel wool (D57) or abrasive pads (D24).	
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. in.	0.050 Sq. in.
MAXIMUM LENGTH PER REPAIR	0.50 In.	0.75 In.
NUMBER OF REPAIRS	2	5
MINIMUM DISTANCE BETWEEN REPAIRS	2.00 In.	1.00 In.
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.060 In.

406040-118B

GO TO NEXT PAGE

6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)

REPAIR BEARING ASSEMBLY

CAUTION

Prior to any repair, mask bearing to preclude contaminants entering the interior of the bearing.

20. Repair damage to exterior surface of bearing using sandpaper (D11).

21. Blend repaired area into surrounding area with crocus cloth (D8).

WARNING

Epoxy polyamide primer (D13) and acrylic lacquer (D104) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CAUTION

Do not allow paint to enter bearing or to contact seal.

22. Apply one coat of epoxy polyamide primer (D13) and two coats of black acrylic lacquer (D104) to repaired area.

CLEAN BEARING SLEEVE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

23. Clean bearing sleeve with a wiping rag (D53) dampened with drycleaning solvent (D1).

24. Dry bearing sleeve with a clean wiping rag (D53).

25. Remove epoxy polyamide primer finish with paint remover (D101).

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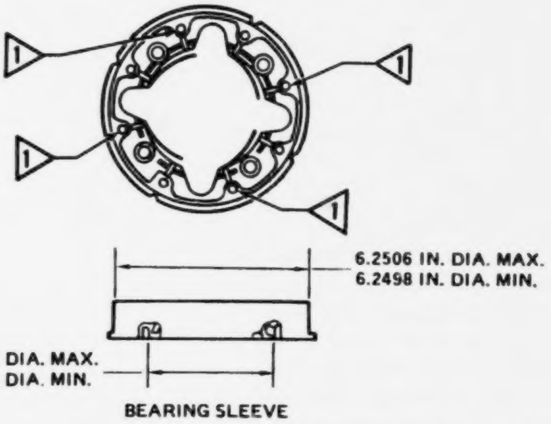
6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)


1
1
1
1
6.2506 IN. DIA. MAX.
6.2498 IN. DIA. MIN.
4.001 IN. DIA. MAX.
4.004 IN. DIA. MIN.
BEARING SLEEVE

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL DAMAGE	0.005 In. before and after repair
CORROSION DAMAGE	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 Sq. in.
NUMBER OF REPAIRS	6
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.

NOTES:

1 The counter sunk depth of the eight tapped holes can be increased from 0.135 inch maximum depth to 0.170 inch maximum depth to remove damage to first thread pitch. Maximum of four holes with no two holes adjacent.

406040-119B

GO TO NEXT PAGE

6-4-7. CLEAN, INSPECT, AND REPAIR COMPONENTS OF TORQUEMETER SUPPORT AND BEARING ASSEMBLY (AVIM) (CONT)

INSPECT BEARING SLEEVE

26. Fluorescent penetrant inspect bearing sleeve in accordance with TM 43-0103.

27. Inspect bearing sleeve to limits shown. Reject bearing sleeve if limits are exceeded.

28. Repair damage to bearing sleeve using sandpaper (D11).

29. Blend repaired area into surrounding area with crocus cloth (D8).

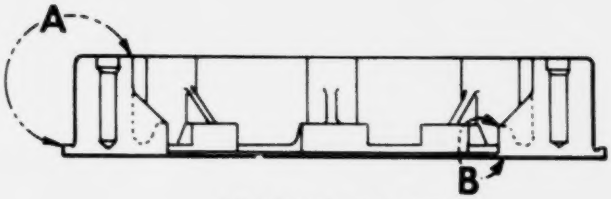
WARNING

Polyamide epoxy primer (D13) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flusk skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

NOTE

Polyamide epoxy primer should be omitted in areas A and B of bearing sleeve.

30. Apply one coat of polyamide epoxy primer (D13) to surface of bearing sleeve.



BEARING SLEEVE

406040-97A

END OF TASK

6-4-8. REMOVE/INSTALL TORQUEMETER TEMPERATURE BULB

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 0-30 Inch-Pounds

Parts:

Nut, Steel, Self-Locking

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Engine Cowling Removed (Task 2-1-24)
Air induction Cowling Removed (Task 4-2-1)

GO TO NEXT PAGE

6-4-8. REMOVE/INSTALL TORQUEMETER TEMPERATURE BULB (CONT)

REMOVE

1. Remove nut (1) and washer (2) from screw (3).

2. Remove screw (3) from clamps (4 and 5) and from bracket (6).

3. Remove clamp (4) from temperature bulb (7).

4. Disconnect electrical connector (8) from temperature bulb (7).

5. Remove temperature bulb (7) from helicopter.

INSTALL

6. Install temperature bulb (7) in clamp (4).

7. Connect electrical connector (8) to temperature bulb (7).

8. Install clamps (5 and 4) with screw (3), washer (2), and nut (1) on bracket (6)

9. Torque nut **12-15 INCH-POUNDS**.

INSPECT

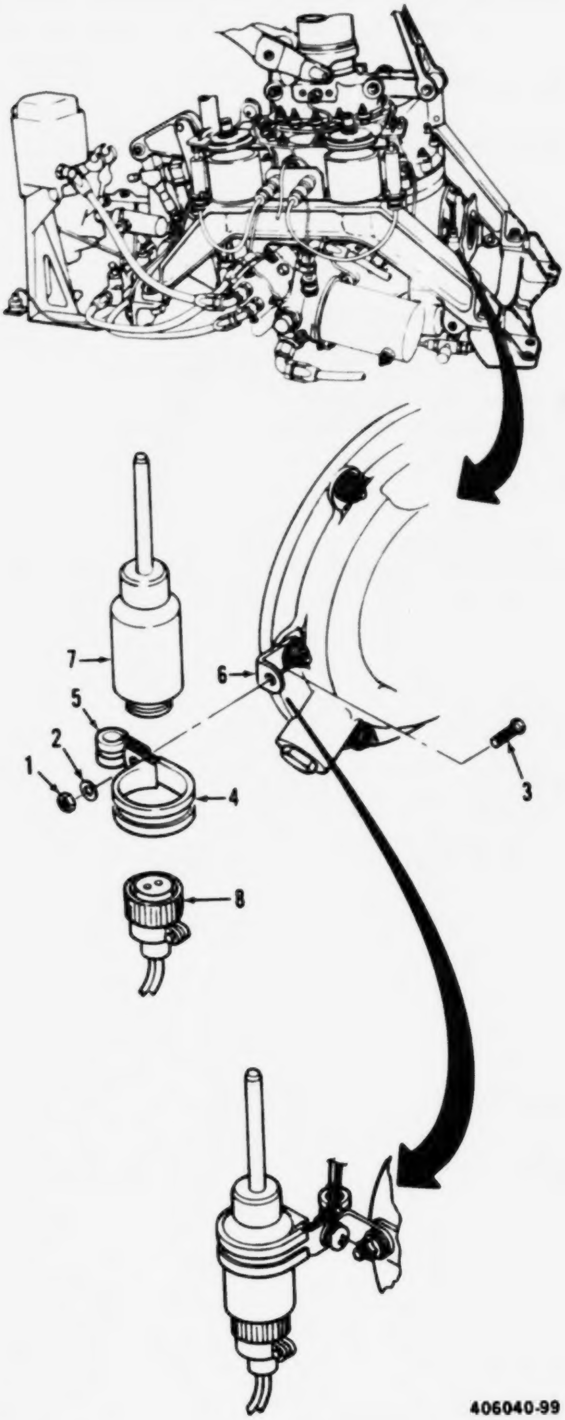
FOLLOW-ON MAINTENANCE

Install air induction cowling (Task 4-2-4).

Install forward fairing assembly (Task 2-1-21).

Install engine cowling (Task 2-1-24).

Pilot perform MOC (TM 55-1520-248-MTF)



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END OF TASK

6-4-9. REMOVE/INSTALL TORQUE TRANSDUCER

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electronic Equipment Tool Kit
Maintenance Platform
Torque Wrench, 30–150 Inch-Pounds
Micrometer, 0–1 Inch
Gage Depth, Micrometer

Materials:

Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Removed (Task 2-1-21)

GO TO NEXT PAGE

6-4-9. REMOVE/INSTALL TORQUE TRANSDUCER (CONT)

NOTE

Procedure same for both transducers.

REMOVE

1. Remove electrical connector (1) from transducer (2).

2. Tag and identify transducer location to ensure correct transducer installation.

3. Cut lockwire and remove transducer (2) with shim (3) from swashplate support (4).

4. Remove shim (3) from transducer (2). Discard unserviceable transducer (2).

SHIM

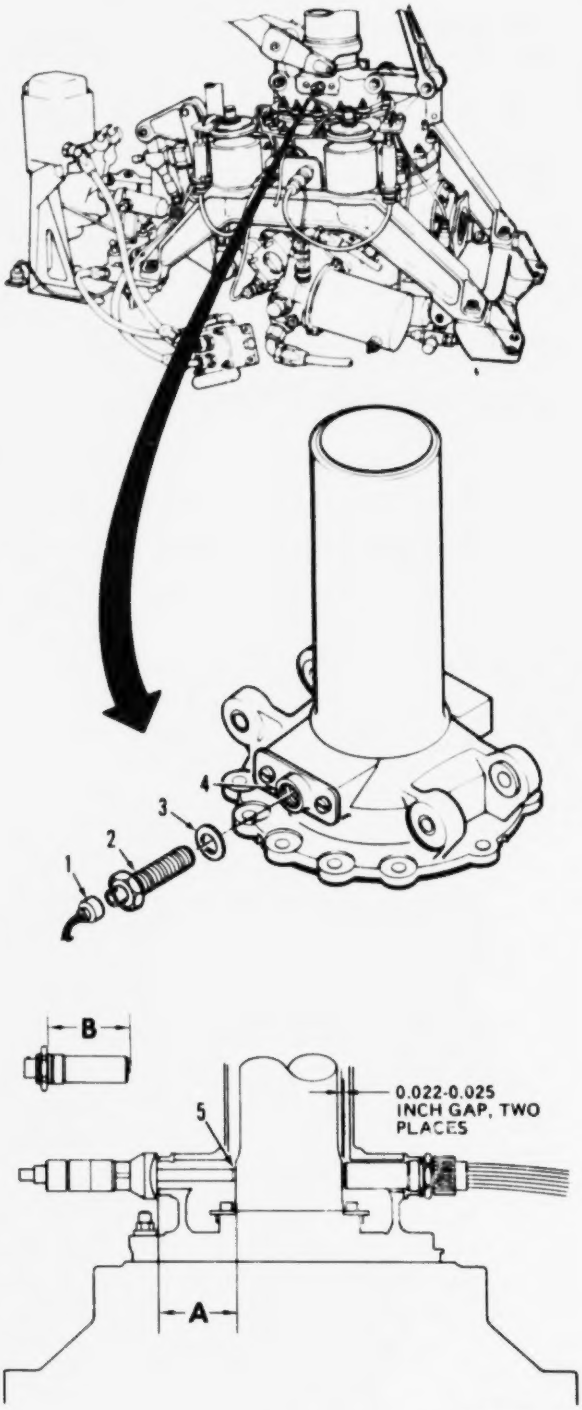
5. Using a micrometer depth gage, measure the distance A, which is from outside surface of swashplate support (4) to mast splines (5).

6. Measure distance B of transducer which is from support mating surface to end contact.

7. Subtract distance B from distance A and peel shim (3) to provide a 0.022-0.025 inch gap between end contact of transducer (2) and mast splines (5).

INSTALL

8. Install shim (3) on transducer (2) and install transducer (2) with shim (3) into swashplate support (4). Torque transducer (2) **80-100 INCH-POUNDS**.



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6-4-9. REMOVE/INSTALL TORQUE TRANSDUCER (CONT)

9. Connect electrical connector (1) to transducer (2).

10. Secure transducer (2) with lockwire (D4).

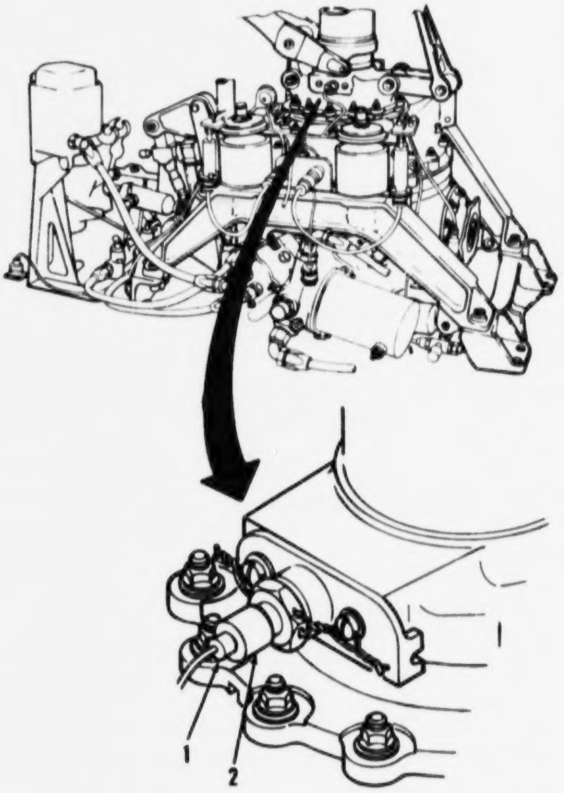
INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

Calibrate mast torque system (Task 9-3-11).



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END OF TASK

6-4-10. INSTALL TORQUEMETER SUPPORT AND BEARING ASSEMBLY

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 30-250 Foot-Pounds

Parts:

Nuts, Steel, Self-Locking Packing (2)

Materials:

Methyl-Ethyl-Ketone (MEK) (D6)
Grease (D15)
Sealing Compound (D20)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 9-1240-778-20

GO TO NEXT PAGE

6-4-10. INSTALL TORQUEMETER SUPPORT AND BEARING ASSEMBLY (CONT)

WARNING

Methyl-ethyl-ketone (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Remove any sealant residue from mating surfaces of torquemeter support and bearing assembly (1) and main rotor hub (2) with wiping rag (D53) dampened with methyl-ethyl-ketone (D6).

2. Lubricate packing (3) on standpipe (4) with grease (D15).

3. Install torquemeter support and bearing assembly (1) on main rotor hub (2) and standpipe (4).

NOTE

Ensure that all mounting holes in torquemeter are aligned with mounting holes in hub prior to installing bolts. One hole in torquemeter is offset to ensure proper alignment.

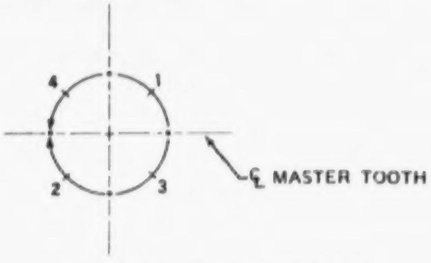
4. Align inspection hole in torquemeter support (5) with bolt holes in main rotor hub (2).

5. Install four bolts (6) through torquemeter support and bearing assembly (1) and main rotor hub (2).

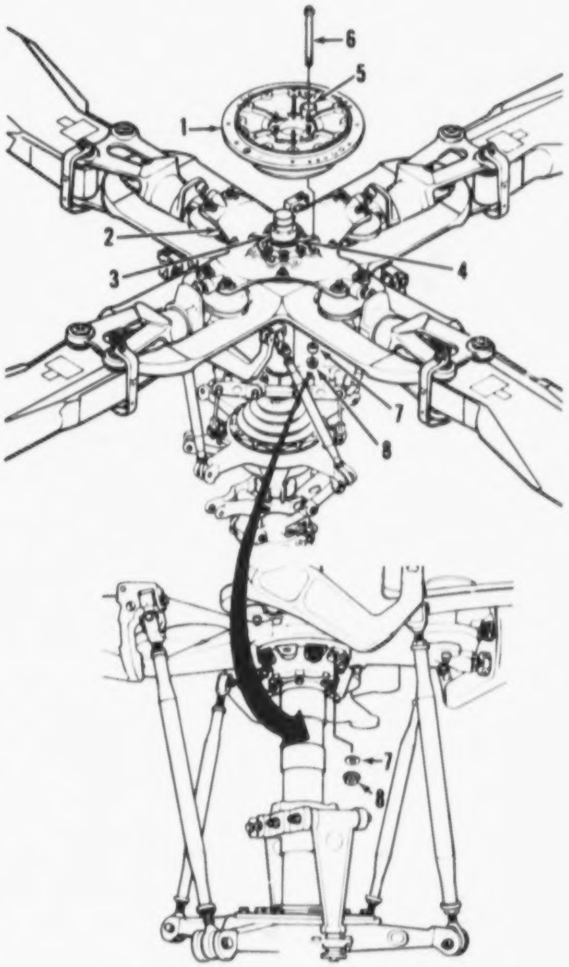
6. Install four washers (7) and four nuts (8) on four bolts (6). Torque nuts (8) **58-62 FOOT-POUNDS.**

NOTE

Torque nuts in a 180 degree sequence.



TORQUE SEQUENCE DIAGRAM FOR SUPPORT ASSEMBLY



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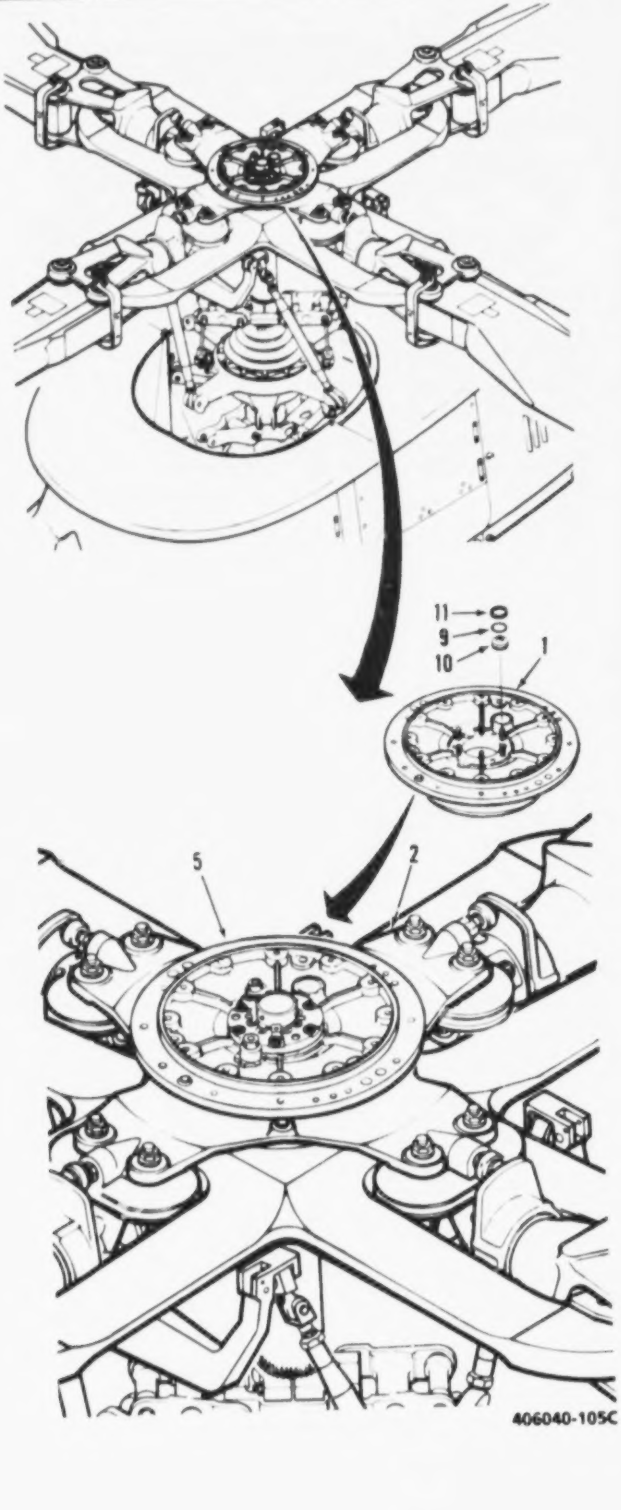
6-4-10. INSTALL TORQUEMETER SUPPORT AND BEARING ASSEMBLY (CONT)

7. Install packing (9) on plug (10).

8. Install plug (10) into inspection hole in torquemeter support (5).

9. Secure plug (10) in torquemeter support (5) with retainer ring (11).

10. Apply a bead of sealing compound (D20) at mating surface of torquemeter support and bearing assembly (1) and main rotor hub (2).



INSPECT

FOLLOW-ON MAINTENANCE

Install standpipe electrical assembly (Task 6-4-2)

Calibrate torquemeter system (Task 9-3-11)

Install mast mounted sight (TM 9-1240-778-20)

END OF TASK

6-4-11. REMOVE TORQUEMETER SYSTEM ANTI-BACKLASH ADAPTER ASSEMBLY

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Drain Hose (B32)
Plastic Scraper (Work Aid)
Oil Container

Personnel Required:

35K Avionic Mechanic
67S Scout Helicopter Repairer (2)

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Standpipe Electrical Assembly Removed (Task 6-4-1)
Connectors Disconnected (TM 9-1240-778-20)

References:

TM 9-1240-778-20

GO TO NEXT PAGE

6-4-11. REMOVE TORQUEMETER SYSTEM ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

1. Remove drain fitting plug (1) from transmission gearshaft support case (2), and install drain hose (3).

2. Drain oil from transmission into suitable oil container.

3. When transmission is drained of oil remove drain hose (3) and install drain fitting plug (1) in transmission gearshaft support case (2).

4. Gain access to anti-backlash adapter through access hole in forward avionics compartment cabin roof.

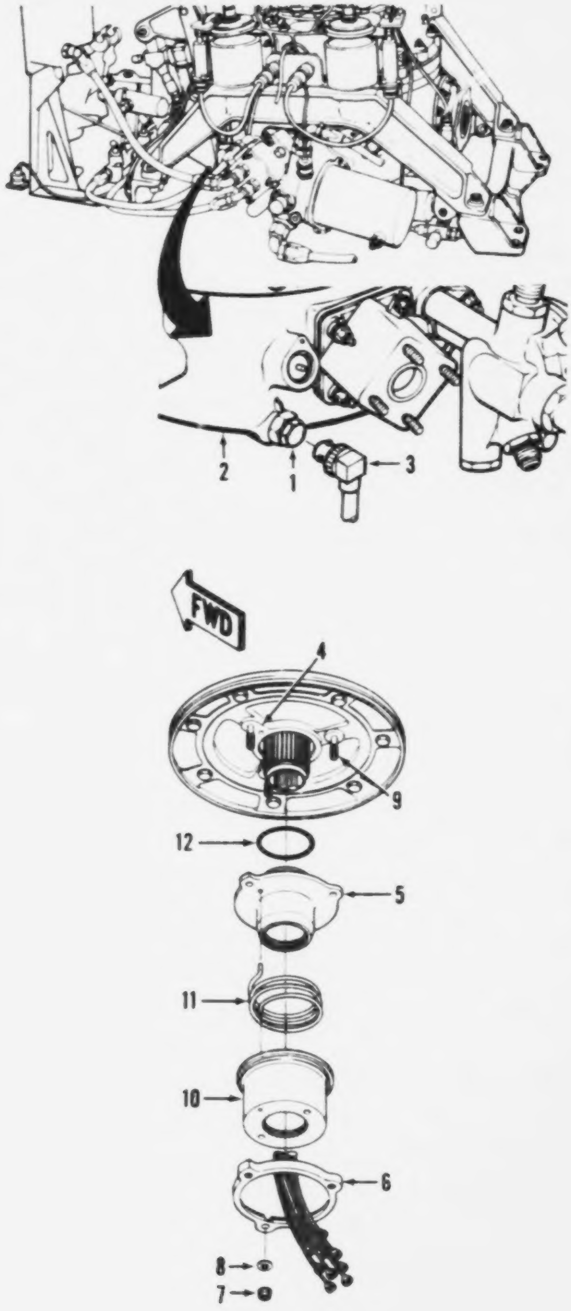
5. Using plastic scraper remove sealant from mating surfaces of support (4), adapter (5), and retaining plate (6).

6. Remove three nuts (7) and three washers (8) from support studs (9).

7. Remove retaining plate (6), sleeve (10), and spring (11).

8. Loosen adapter (5) by tapping lightly with plastic mallet.

9. Remove adapter (5) with packing (12) from support (4). Discard packing (12).



VIEW LOOKING UP

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END OF TASK

6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Gage Depth, Dial Indicating Caliper Set, Micrometer Outside 0-6 Inches
Gage Set, Telescoping, 5/16-6 Inches

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Sandpaper 400 Grit (D11)
Crocus Cloth (D8)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0103

GO TO NEXT PAGE

6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

CLEAN RETAINING PLATE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean retaining plate with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry retaining plate with a clean wiping rag (D53).

INSPECT RETAINING PLATE

3. Fluorescent penetrant inspect retaining plate in accordance with TM 43-0103.

4. Inspect retaining plate to limits shown. Reject retaining plate if limits are exceeded.

REPAIR RETAINING PLATE

5. Repair damage to retainer plate using sandpaper (D11).

6. Blend repaired area into surrounding area with crocus cloth (D8).

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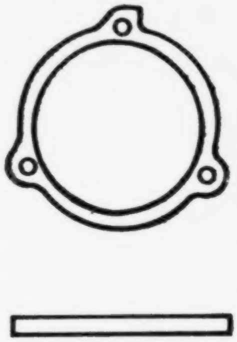
6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)



RETAINING PLATE

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS ▭ MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL DAMAGE	0.010 In. before and after repair
CORROSION	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.
NUMBER OF REPAIRS	2
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.

NOTES:

1. No cracks are permitted.

406040-120B

GO TO NEXT PAGE

6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

CLEAN SPRING SLEEVE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes

7. Clean spring sleeve with a wiping rag (D53) dampened with drycleaning solvent (D1).

8. Dry spring sleeve with a clean wiping rag (D53).

INSPECT SPRING SLEEVE

9. Fluorescent penetrant inspect spring sleeve in accordance with TM 43-0103.

10. Inspect spring sleeve to limits shown. Reject spring sleeve if limits are exceeded.

REPAIR SPRING SLEEVE

11. Repair damage to spring sleeve using sandpaper (D11).

12. Blend repaired area into surrounding area with crocus cloth (D8).

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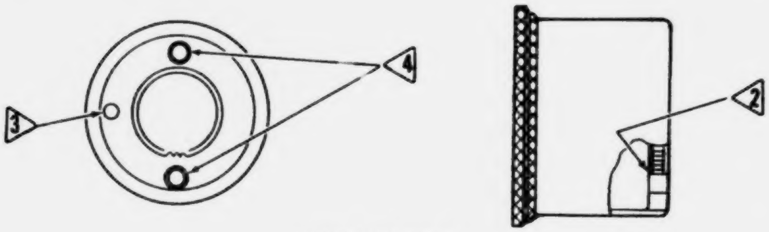
6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)



SPRING SLEEVE

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS ▨	 □
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	0.005 In. before and after repair	0.010 In. before and after repair
CORROSION	0.005 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. In.	0.50 Sq. in.
NUMBER OF REPAIRS	2	4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.

NOTES:

1. No cracks are permitted.

▷2 Edge damage to spline may be removed by chamfering ends of teeth to a maximum of 0.080 inches x 45° on inside edge only. Dimension between 0.054 inch DIA pins should be 1.331 inch minimum and 1.342 inch maximum.

▷3 Hole may be elongated by 0.010 inch maximum.

▷4 Damage to these holes may be reworked by reaming holes to 0.340 inch maximum diameter.

406040-121B

GO TO NEXT PAGE

6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

CLEAN ANTI-BACKLASH SPRING

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

13. Clean anti-backlash spring with a wiping rag (D53) dampened with drycleaning solvent (D1).

14. Dry anti-backlash spring with a clean wiping rag (D53).

INSPECT ANTI-BACKLASH SPRING

15. Fluorescent penetrant inspect anti-backlash spring in accordance with TM 43-0103.

16. Inspect anti-backlash spring to limits shown. Reject anti-backlash spring if limits are exceeded.

REPAIR ANTI-BACKLASH SPRING

17. Repair damage to anti-backlash spring using sandpaper (D11).

18. Blend repaired area into surrounding area with crocus cloth (D8).

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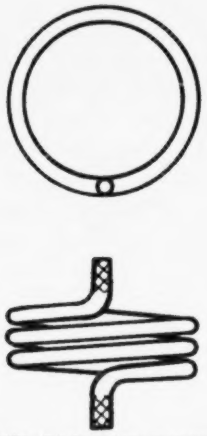
6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)



ANTI—BACKLASH SPRING

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	0.030 In. before and after repair	0.015 In. before and after repair
CORROSION	0.005 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. in.	0.25 Sq. in.
NUMBER OF REPAIRS	2	4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.

NOTES:

1. No cracks are permitted.

406040-122B

GO TO NEXT PAGE

6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

CLEAN ANTI-BACKLASH ADAPTER

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

19. Clean anti-backlash adapter with a wiping rag (D53) dampened with drycleaning solvent (D1).

20. Dry anti-backlash adapter with a clean wiping rag (D53).

INSPECT ANTI-BACKLASH ADAPTER

21. Fluorescent penetrant inspect anti-backlash adapter in accordance with TM 43-0103.

22. Inspect anti-backlash adapter to limits shown. Reject anti-backlash adapter if limits are exceeded.

REPAIR ANTI-BACKLASH ADAPTER

23. Repair damage to anti-backlash adapter using sandpaper (D11).

24. Blend repaired area into surrounding area with crocus cloth (D8).

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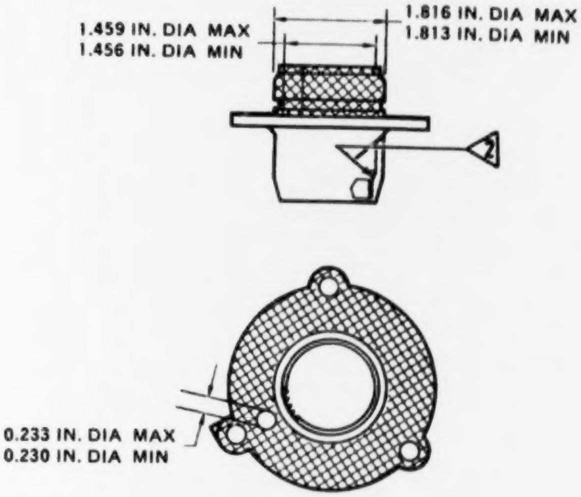
6-4-12. CLEAN, INSPECT, AND REPAIR COMPONENTS OF ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)


1.459 IN. DIA MAX
1.456 IN. DIA MIN
1.816 IN. DIA MAX
1.813 IN. DIA MIN
2
0.233 IN. DIA MAX
0.230 IN. DIA MIN

ANTI-BACKLASH ADAPTER

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE	0.003 In. before and after repair	0.010 In. before and after repair
CORROSION	0.003 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	0.25 Sq. in.
NUMBER OF REPAIRS	2	4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.

NOTES:

1. No cracks are permitted.
2. Spline damage at inner ends may be removed by chamfering ends, of teeth to a maximum of 0.06 inch x 30° on inside edge only and not reduce spline length to less than 0.25 inch. Dimension between 0.054 inch DIA pins is 1.330 inch minimum to 1.342 inch maximum.

406040-123B

END OF TASK

6-4-13. INSTALL TORQUEMETER SYSTEM ANTI-BACKLASH ADAPTER ASSEMBLY

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 30-150 Inch-Pound
Preload Tool (B163)

Parts:

Packing
Nut, Steel, Self-Locking

Materials:

Sealing Compound (D20)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer (2)
Pilot

References:

TM 9-1240-778-20
TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Removed (Task 2-1-21)
Standpipe Electrical Assembly Removed (Task 6-4-1)

GO TO NEXT PAGE

6-4-13. INSTALL TORQUEMETER SYSTEM ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

1. Gain access to bottom of standpipe through cabin roof access hole in forward avionics compartment.

2. Install packing (1) on adapter (2) and install adapter (2) with packing (1) on support (3).

3. Install spring (4) and slide spring (4) onto adapter (2).

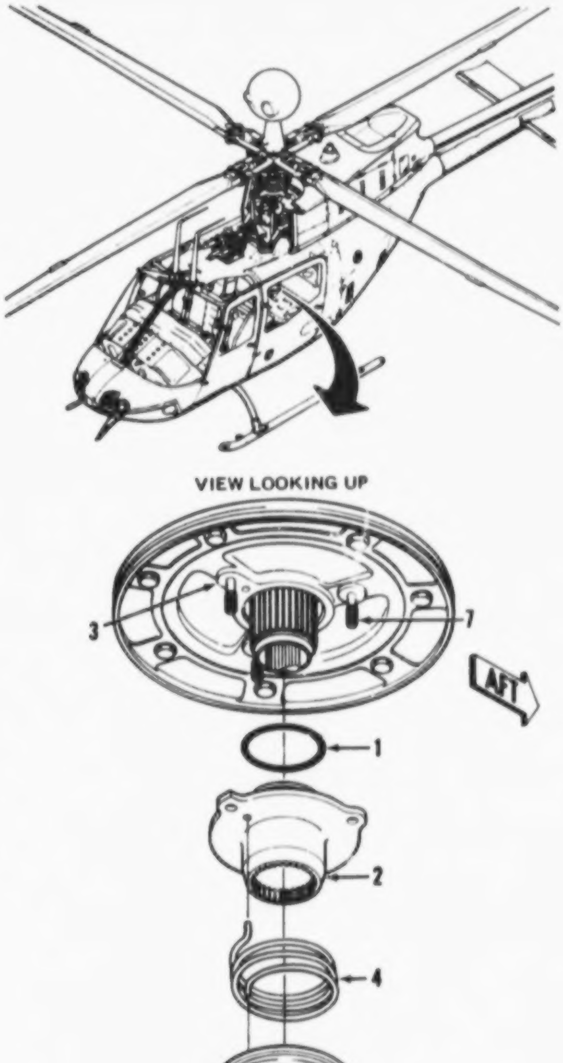
4. Install spring sleeve (5).

5. Install retainer plate (6).

6. Slide spring sleeve (5) and retainer plate (6) onto spring (4) on adapter (2) and support studs (7).

7. Install three washers (8) and three nuts (9). Do not torque nuts at this time.

8. Install standpipe assembly task (6-4-2).



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6-4-13. INSTALL TORQUEMETER SYSTEM ANTI-BACKLASH ADAPTER ASSEMBLY (CONT)

NOTE

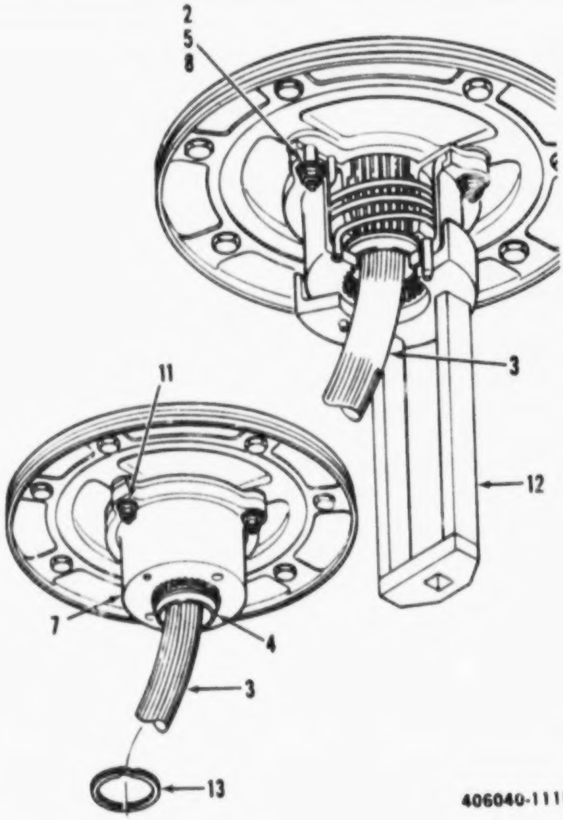
Ensure that spring is seated in retainer hole in adapter and spring sleeve by trying to turn spring sleeve by hand.

9. Install spring sleeve wrench assembly (12) on spring sleeve (7) and engage holes in spring sleeve (7). Torque spring sleeve (7) **130-150 INCH-POUNDS** to align spring sleeve (7) splines with standpipe (4) splines.

10. Release torque on spring sleeve (7). Torque nuts (11) **50-70 INCH-POUNDS**.

11. Remove spring sleeve wrench assembly (12) from spring sleeve (7).

12. Install retainer ring (13) on end of standpipe (4).



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INSPECT

13. Apply bead of sealing compound (D20) to exterior mating surfaces of support (5), adapter (2), and retainer plate (8).

FOLLOW-ON MAINTENANCE

Connect standpipe electrical assembly connectors (TM 9-1240-778-20).

Service transmission (Task 1-4-6).

Install forward fairing (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-4-14. REMOVE MAIN ROTOR MAST ASSEMBLY

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Cover and Lift Plate (B142)
Aircraft Mechanic Tool Kit
Heat Gun (B240)
Hoist
Lifting Eye Clevis (B263)
Maintenance Platform
Mast, Clevis Tool (B165)
Plastic Scraper (Work Aid)

Materials:

Gloves, White Cotton (D61)
Barrier Material (D34)

Personnel Required:

67S Scout Helicopter Repairer

Equipment Condition:

Mast Mounted Sight Removed (TM 9-1240-778-20)
Standpipe Electrical Assembly Removed (Task 6-4-1)
Torquemeter Support and Bearing Assembly Removed (Task 6-4-4)
Main Rotor Hub and Blades Removed (Task 5-1-1)
Forward Fairing Removed (Task 2-1-21)
Engine Cowling Removed (Task 2-1-24)
Air Induction Cowling Removed (Task 4-2-1)
Swashplate and Support Removed (Task 5-2-32)

1. Using plastic scraper, remove sealant from the edges of the mating surfaces of the bearing retainer (1) and transmission (2).

CAUTION

To prevent corrosion, do not handle bearing or mast assembly with bare hands below the upper mast bearing retainer. Wear white gloves (D61).

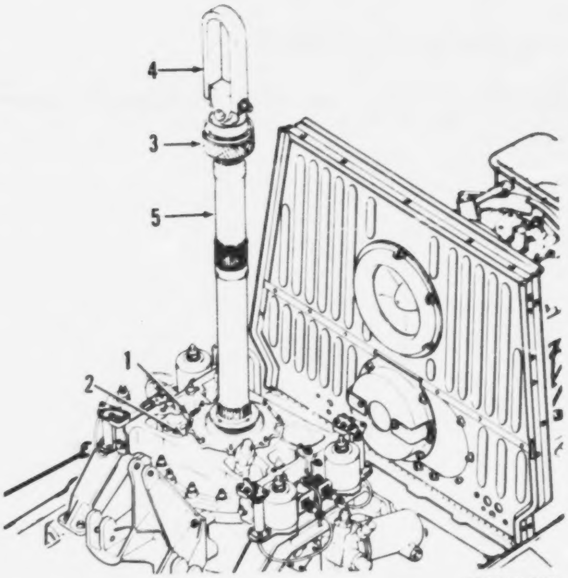
2. Install a mast clevis tool (B165) (3) with lifting eye clevis (B263) (4) on the mast (5)(Task 6-3-4).

3. Attach a hoist to lifting eye clevis (B263) (4) and draw up the slack in the hoist.

4. With a heat gun, heat the top case area of the transmission (2) around the mast bearing retainer (1).

NOTE

Do not apply heat directly on the mast bearing plate. This will cause the plate area to expand.



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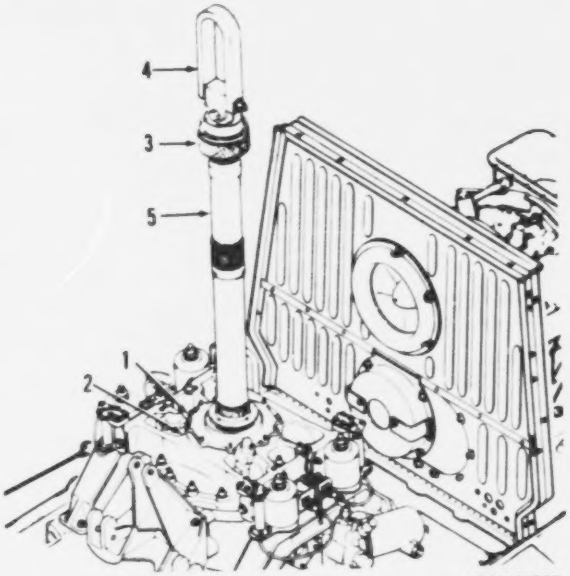
6-4-14. REMOVE MAIN ROTOR MAST ASSEMBLY (CONT)



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CAUTION

Do not exceed 250°F when heating materials. Overheating materials can cause alterations in the metal annealing characteristics.

5. Apply a very slight pressure on the hoist (approximately 10 pounds) to start the mast (5) out of the transmission (2). If necessary, tap on the mast and/or mast bearing plate with a rubber mallet to loosen the mast bearing retainer from the transmission.

6. Once the mast (5) and mast bearing retainer (1) start to move, continue to draw them up and out with the hoist while guiding the mast (5) until the mast clears the transmission (2).

NOTE

Do not let the mast hit against the transmission, especially the bottom portion of the mast. The bottom portion of the mast surface acts as the inner race of the lower mast bearing. Any damage over 0.002 on the lower mast surface is cause for replacement of the mast.

7. Move the mast (5) clear of the helicopter with the hoist and lower the mast (5).

8. Disconnect the mast (5) from the hoist hook and remove the mast lifting tool. Set mast (5) on suitable surface. Remove and discard the 2 packings on the mast bearing retainer.

NOTE

If the mast is going to be out of the transmission for any length of time enclose the bottom portion of the mast up to the top of the mast bearing plate in plastic, and install transmission cover plate/lifting (B142) tool on transmission to seal the transmission.

END OF TASK

6-4-15. DISASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM)

This task covers: Disassembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Powertrain Repairer Tool Kit
- Plastic Scraper
- Hydraulic Press (B192)
- Tool Set, Mast Nut (B141)
- Power Wrench Kit (B86)
- Bearing Removal/Installation Plate (B146)
- Caliper Set, Micrometer, Outside, 0-1 Inch
- Vise
- Heat Gun (B240)
- Gloves, Cloth, Asbestos
- Rawhide Mallet
- Nonmetallic Drift

Materials:

- Wiping Rag (D53)
- Gloves, White Cotton (D61)

Personnel Required:

68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-4-15. DISASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

REMOVE LOCK PLATE

1. Cut lockwire and remove two screws (1) from lockplate (2).

2. Remove lockplate (2) from mast (3).

ASSEMBLE MAST NUT TOOL SET, POWER WRENCH AND MAST

3. Install tube (4) in vise and tighten vise to secure tube (4).

4. Slide power wrench (B86) (5) onto tube (4), being sure to engage studs on power wrench (5) with holes in tube (4) base.

5. Install adapter (6) into power wrench (B86) (5), being sure to mesh splines of adapter (6) and power wrench (5).

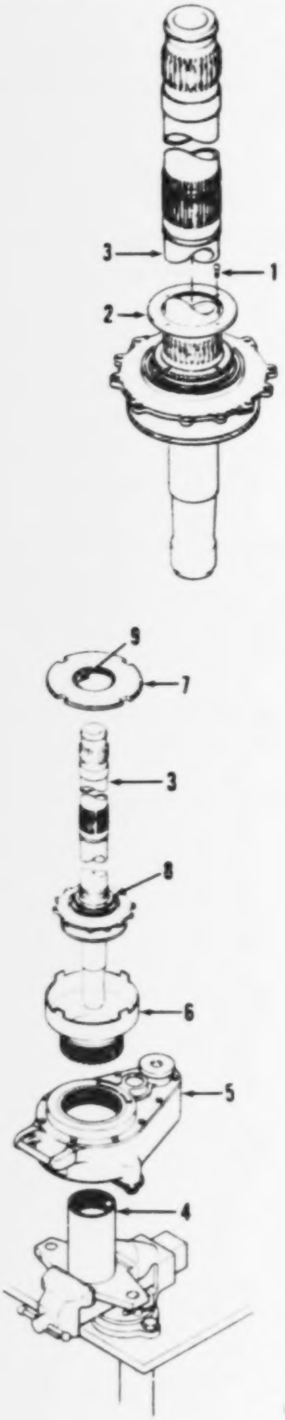
CAUTION

> To prevent corrosion, do not handle bearing or mast assembly with bare hands below upper mast bearing liner. Wear white gloves (D61).

6. Install mast (3) into adapter (6) being sure to mesh lower mast (3) splines and splines in tube (4).

7. Install plate (7) on mast bearing nut (8) and engage tabs on adapter (6).

8. Ensure that retaining ring (9) in plate (7) is seated against bearing nut (8) and spline is fully engaged.



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6-4-15. DISASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

9. Using breaker bar (10) from power wrench kit, break torque on upper mast nut (8).

CAUTION

Assure that torque is applied to bearing nut in counterclockwise direction.

REMOVE MAST

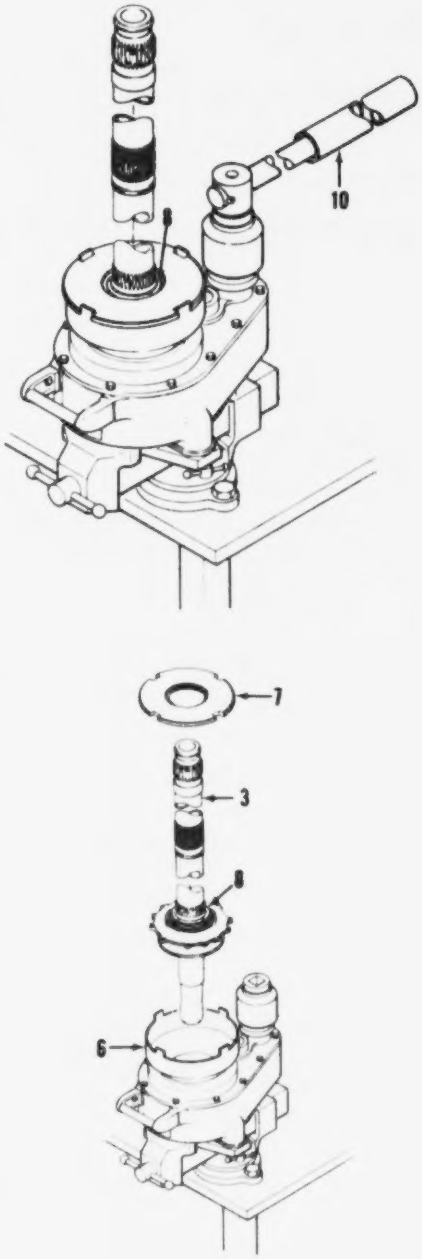
10. Remove plate (7) from adapter (6) and mast (3).

CAUTION

To prevent corrosion, do not handle bearing or mast assembly with bare hands below upper mast bearing liner. Wear white gloves (D61). After bearing removal, care must be used to avoid dropping separable pieces.

11. Remove mast (3) from adapter (6) and place mast (3) on a suitable work bench.

12. Disassemble and store power wrench kit and mast nut tool set.



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6-4-15. DISASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

13. Remove upper mast bearing nut (8) from mast (3).

14. Remove four screws (11) from seal and bearing retaining plate (12) and remove seal and bearing retaining plate (12) from mast (3).

15. Remove shim (13) from mast (3).

16. Using 0-1 inch micrometer measure shims (13) and retain for assembly procedures

17. Remove packing (14) from bearing liner (15), and mast (3). Discard packing (14).

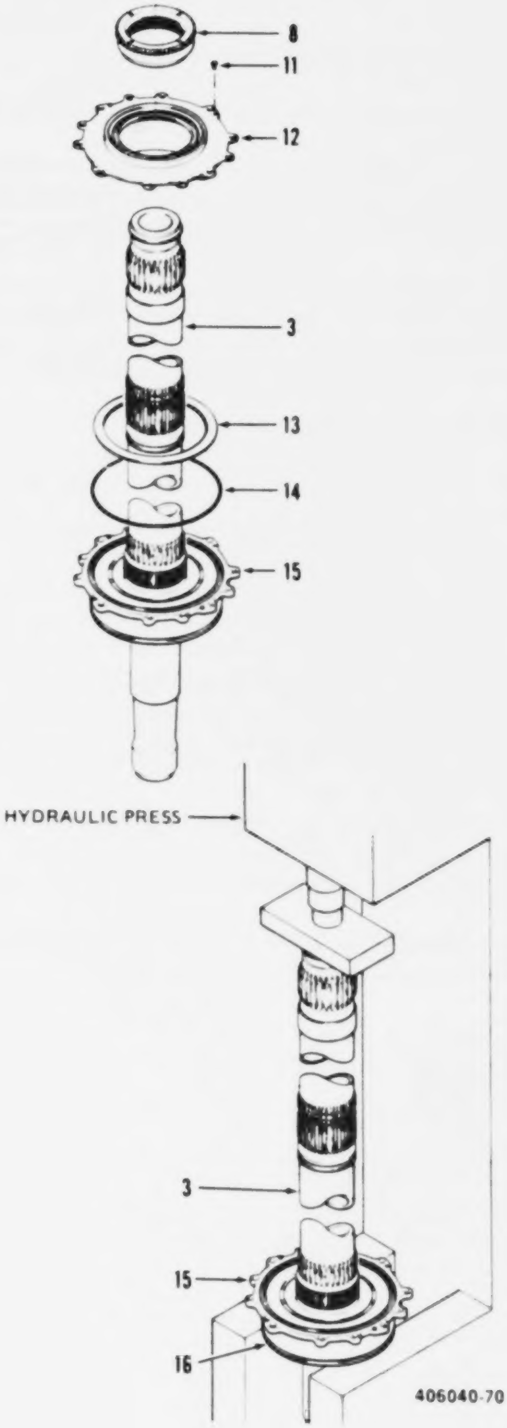
REMOVE BEARING AND LINER

CAUTION

> To prevent corrosion, do not handle bearing or mast assembly with bare hands below upper mast bearing liner. Wear white gloves (D61).

18. Install bearing removal/installation plate (16) on bottom end of mast (3). Install over splines with chamfered side toward bearing.

19. Place mast (3), bearing and liner (15) and removal/installation plate (16) upright in hydraulic press. Press bearing and liner (15) from mast (3), being sure to prevent any damage to mast (3).



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6-4-15. DISASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

REMOVE UPPER MAST BEARING SEAL

21. Place seal and bearing retaining plate (12) on work bench.

22. Using plastic scraper, remove sealant from seal (17) and seal and bearing retaining plate (12).

23. Remove seal (17) from seal and bearing retaining plate (12) being careful not to damage seal and bearing retainer (12), by tapping out with nonmetallic drift and rawhide mallet. Discard seal (17).

REMOVE UPPER MAST BEARING

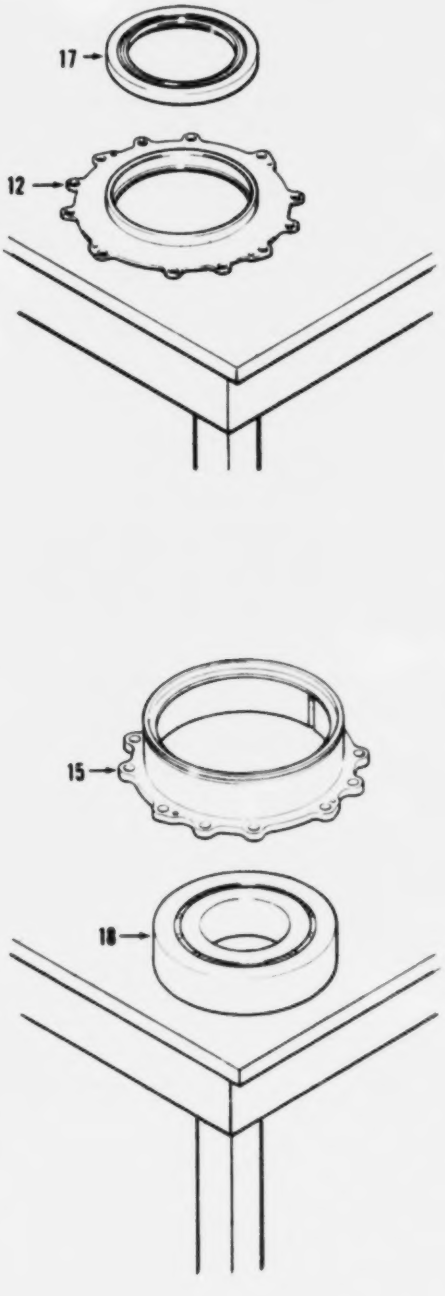
24. Place bearing (18) and bearing liner (15) on work bench.

WARNING

> Use care when handling heat gun (B240) and heated parts. Wear asbestos gloves to avoid burns. If burn occurs, seek medical aid.

25. Using heat gun (B240), heat bearing liner. Remove bearing (18) from bearing liner (15) by tapping out with nonmetallic drift and rawhide mallet.

26. Cover bearing with clean wiping rag (D53) to prevent contamination.



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END OF TASK

6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Mechanic Tool Kit
Gage Depth, Dial Indicating
Caliper Set, Micrometer, Outside 0-6 Inches
Dial Indicator 0-0 200 Inches
Gage Set, Telescoping, 5/16-6 Inches
Goggles
Compressor Unit, Reciprocating
Spray Gun, Paint
Respirator, Air Filtering
Separator, Oil and Water, Spray Gun
Plastic Scraper

Materials:

Methyl-Ethyl-Ketone (MEK) (D6)
White Cotton Gloves (D61)
Drycleaning Solvent (D1)
Wiping Rags (D53)
Abrasive Pads (D89)
Sandpaper 400 Grit (D11)
Crocus Cloth (D8)
Rubber Gloves (D119)
Brush Cadmium Plating (D106)
Steel Wool (D57)
Corrosion Preventive Oil (D190)
Polyamide Epoxy Primer (D13)
Black Acrylic Lacquer (D104)
Fingerprint Removal Compound (D66)
Zinc Phosphate (D192)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

References:

TM 43-0103

General Safety Instructions:

WARNING

Drycleaning solvent (D1), acrylic lacquer (D104), and polyamide epoxy primer (D13) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

CAUTION

To prevent corrosion, do not handle mast assembly with bare hands below upper mast bearing liner. Wear white gloves (D61).

CLEAN MAIN ROTOR MAST

1. Clean main rotor mast with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry main rotor mast with a clean wiping rag (D53).

3. Remove paint on all painted areas of the main rotor mast.

4. Rinse main rotor mast with drycleaning solvent (D1).

5. Clean area of main rotor mast below mast bearing journal with fingerprint removal compound (D66).

6. Dry lower area of mast with a clean wiping rag (D53).

7. If inspection/repair is not performed within 24 hours of cleaning, apply corrosion preventive oil (D190) to mast.

INSPECT MAIN ROTOR MAST

8. Visually inspect mast for signs of damage or wear. Dimensionally inspect areas that are worn. Reject main rotor mast if limits are exceeded.

9. Inspect main rotor mast to damage limits shown. Reject main rotor mast if limits are exceeded.

10. Perform main rotor mast runout as shown.

REPAIR MAIN ROTOR MAST

11. Repair damage to main rotor mast using sandpaper (D11).

12. Blend repaired area into surrounding area with crocus cloth (D8).

13. Magnetic particle inspect main rotor mast in accordance with TM 43-0103.

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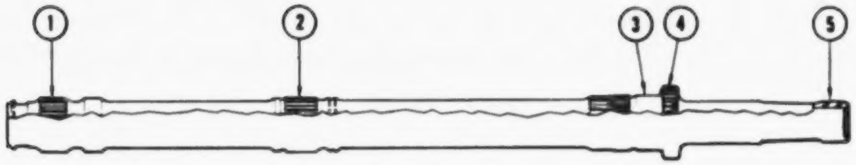
6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)



WEAR LIMITS

ITEM	NOMENCLATURE	LOCATION	MINIMUM	MAXIMUM
1.	Spline, upper use 0.1920 dia. pins	Over pins	2.8906	2.8951
2.	Spline, center use 0.0800 dia. pins	Over pins	2.7548	2.7578
3.	Bearing Journal	OD	2.7567	2.7573
4.	Spline, lower use 0.1600 dia. pins	Over pins	3.8225	3.8309
5.	Bearing Journal	OD	△1	2.0473

△1 Maximum allowable wear on lower journal is 0.0002 inch. Measure difference in diameter of worn and unworn areas.

406040-323

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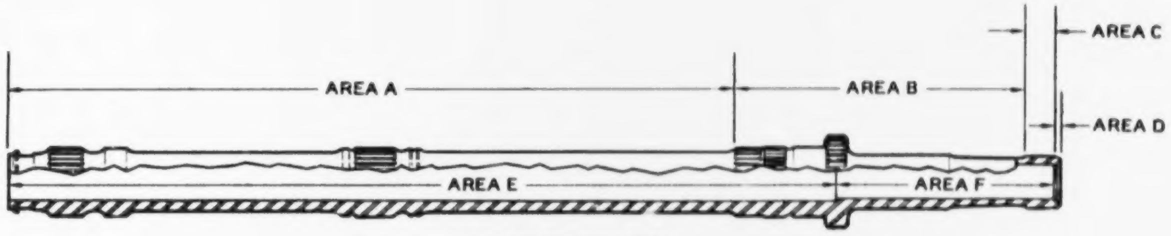
6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)



MAIN ROTOR MAST

ALLOWABLES:

	AREA A —	Mechanical and Corrosion damage	— 0.005 inch maximum depth with 0.50 inch radius.
	AREA B —	Surface corrosion	— removable with abrasive pads or steel wool.
		Axial scratches	— 0.003 inch maximum depth on upper mast bearing journal. No more than 8 scratches 0.001-0.003 inch deep per inch of circumference.
		Circumferential scratches	— Surface scratches removable with abrasive pads or steel wool.
	AREA C —	Surface corrosion	— removable with abrasive pads or steel wool.
	AREA D —	Mechanical and Corrosion	— 0.010 inch maximum depth, with 0.50 inch radius.
3	AREA E —	Mechanical and Corrosion	— 0.005 inch maximum depth or 1.615 maximum inside diameter.
3	AREA F —	Mechanical and Corrosion	— 0.005 inch maximum depth or 1.515 maximum inside diameter.

NOTES:

1. Maximum area per external repair is one square inch, and maximum number of repairs is 5.
2. External repairs shall have a minimum blend radius of 0.50 inch.
3. Cleanup, by honing or similar method, material removal to be uniform around diameter, with 0.50 inch maximum blend radius.

406040-4B

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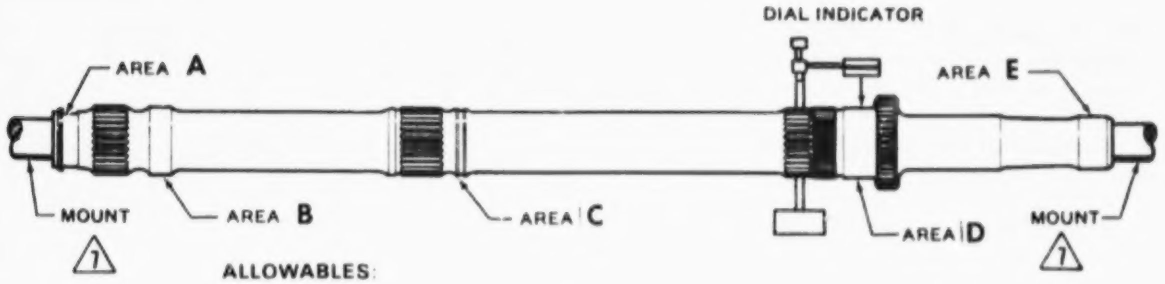
PREFERRED MAST RUN-OUT METHOD (MAIN ROTOR)

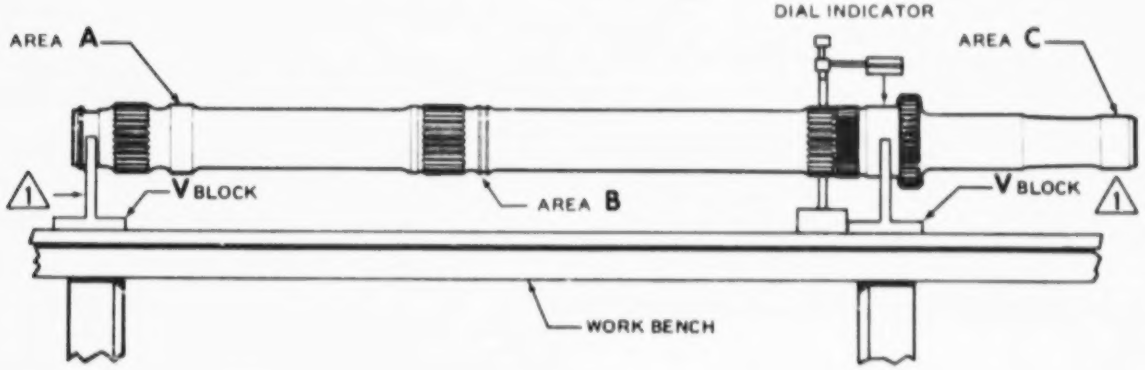


ALLOWABLES:

1. Runout at area A (upper cone seat) not to exceed 0.001 inch TIR.
2. Runout at area B (lower cone seat) not to exceed 0.001 inch TIR.
3. Runout at area C not to exceed 0.005 inch TIR.
4. Runout at area D (upper bearing journal) not to exceed 0.002 inch TIR.
5. Runout at area E (lower bearing journal) not to exceed 0.001 inch TIR.
6. Runout at all other areas not to exceed 0.010 inch TIR.

△7 Mount mast between dead centers, turn by hand only.
If dead centers are unavailable use live centers.

ALTERNATE MAST RUN-OUT METHOD (MAIN ROTOR)



ALLOWABLES:

1. Runout at area A (lower cone seat) not to exceed 0.002 inch TIR.
2. Runout at area B not to exceed 0.006 inch TIR.
3. Runout at area C (lower bearing journal) not to exceed 0.003 inch TIR.
4. Runout at all other areas not to exceed 0.011 inch TIR.

NOTE:

1. To prevent binding of mast in "V" blocks when turned, place ¼ inch square steel stock in groove of "V" blocks.
2. Any runout measured that is greater than specified limits is not cause for replacement. Recheck mast using preferred method.

406040-72A

GO TO NEXT PAGE

6-4-16 CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

NOTE

Do not apply brush cadmium plating, polyamide epoxy primer or black acrylic lacquer to area C of mast.

14. Apply brush cadmium plating (D106) to repairs made to mast in areas A or B.

15. Protect reworked inside diameter as follows:

a. Clean with MEK (D6) or lacquer thinner (D73).

b. Apply zinc phosphate (D192) in accordance with Federal Specification TT-C-490.

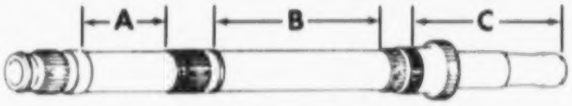
c. Install a non-metallic plug in lower end of mast.

d. Flow polyamide epoxy primer (D13) into bore while rotating mast. Ensure coverage of all internal surfaces.

e. Position mast upright, remove plug and drain primer. Allow to air dry.

16. Apply one coat of polyamide epoxy primer (D13), let dry, and apply two coats of black acrylic lacquer (D104) to repairs made in areas A or B. No paint is allowed on splines or threads.

17. Lightly stamp the letter "R" on the center of the data plate between the part number and serial number.



MAIN ROTOR MAST

406040-73A

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CLEAN MAST BEARING NUT LOCKPLATE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

18. Clean mast bearing nut lockplate with a wiping rag (D53) dampened with drycleaning solvent (D1).

19. Dry mast bearing nut with a clean wiping rag (D53).

INSPECT MAST BEARING NUT LOCKPLATE

20. Fluorescent penetrant inspect mast bearing nut lockplate in accordance with TM 43-0103.

21. Inspect mast bearing nut lockplate to damage limits shown. Reject mast bearing nut that exceeds limits.

REPAIR MAST BEARING NUT LOCKPLATE

22. Repair damage to mast bearing nut lockplate using sandpaper (D11).

23. Blend repaired area into surrounding area with crocus cloth (D8).

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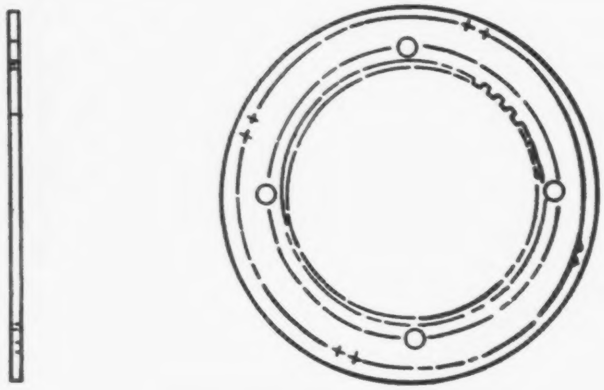
6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)



MAST BEARING NUT LOCKPLATE

DAMAGE LOCATION SYMBOLS

▭

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL DAMAGE	0.005 In. before and after repair
CORROSION DAMAGE	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	1.0 Sq. in.
NUMBER OF REPAIRS	4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.

SPLINE DAMAGE:

Depth:	0.005 In.
Length:	Full face width
Number:	40 Total, no more than 10 in 90° quadrant.

406040-124B

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CLEAN UPPER MAST BEARING NUT

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

24. Clean upper mast bearing nut with a wiping rag (D53) dampened with drycleaning solvent (D1).

25. Dry upper mast bearing nut with a clean wiping rag (D53).

INSPECT UPPER MAST BEARING NUT

26. Fluorescent penetrant inspect upper mast bearing nut in accordance with TM 43-0103.

27. Inspect mast bearing to damage limits shown. Reject upper mast bearing if limits are exceeded.

REPAIR UPPER MAST BEARING NUT

28. Repair damage to upper mast bearing nut using sandpaper (D11).

29. Blend repaired area into surrounding area with crocus cloth (D8).

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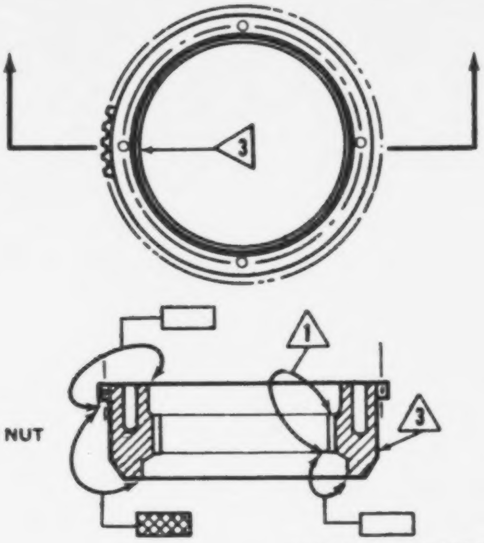
6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
	▨	▭
MECHANICAL DAMAGE	0.003 In. before and after repair	0.010 In. before and after repair
CORROSION DAMAGE	Only that removable with steel wool (D57) or abrasive pads (D24)	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR		0.25 Sq. in.
NUMBER OF REPAIRS		4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.
SPLINE DAMAGE:		
Depth:	0.010 In.	
Length:	Full face width	
Number:	All	

NOTES:

1 One thread maximum at each end may be reworked to remove damage.

2 Maximum allowable depth of seal wear groove is 0.002 on diameter.

3 No mechanical damage allowed on seal mating diameter.

406040-125B

GO TO NEXT PAGE

CLEAN MAST SEAL AND BEARING RETAINING PLATE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

30. Clean sealant from edge of retaining plate with a plastic scraper. Clean mast seal and bearing retaining plate with a wiping rag (D53) dampened with drycleaning solvent (D1).

31. Dry mast seal and bearing retaining plate with a clean wiping rag (D53).

INSPECT MAST SEAL AND BEARING RETAINING PLATE

32. Fluorescent penetrant inspect mast seal and bearing retaining plate in accordance with TM 43-0103.

33. Inspect mast seal and bearing retaining plate to damage limits shown. Reject mast seal and bearing retaining plate if limits are exceeded.

REPAIR MAST SEAL AND BEARING RETAINING PLATE

34. Repair damage to mast seal and bearing retaining plate using sandpaper (D11).

35. Blend repaired area into surrounding area with crocus cloth (D8).

NOTE

Omit brush cadmium plating from area A of mast seal and bearing retaining plate.

36. Apply brush cadmium plating (D106) to mast seal and bearing retaining plate.

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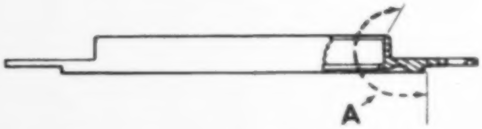
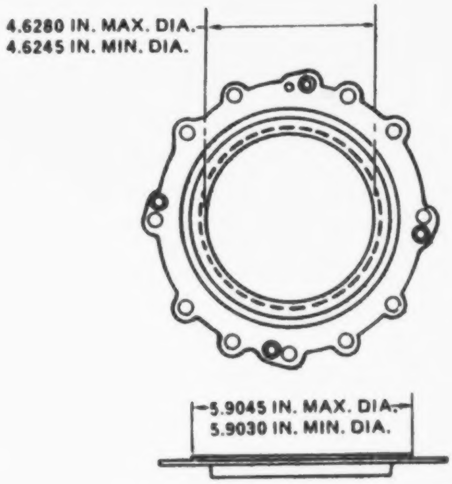


MAST SEAL BEARING RETAINING PLATE

406040-74A


4.6280 IN. MAX. DIA.
4.6245 IN. MIN. DIA.
5.9045 IN. MAX. DIA.
5.9030 IN. MIN. DIA.

MAST SEAL BEARING RETAINING PLATE

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS
	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL DAMAGE	0.005 In. before and after repair
CORROSION	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 Sq. in.
NUMBER OF REPAIRS	6
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.

NOTES:

1. No cracks are permitted.
2. No wear through permitted.

406040-126B

GO TO NEXT PAGE

6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

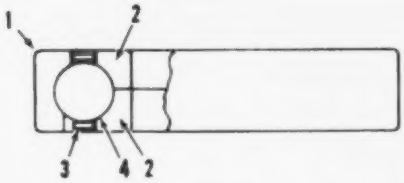
CLEAN UPPER MAST BEARING

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

37. Clean upper mast bearing using solvent (D1) and a brush.

38. Let upper mast bearing air dry and then cover with clean wiping rag (D53) to prevent contamination with foreign particles.



UPPER MAST BEARING

406040-75A

INSPECT UPPER MAST BEARING

CAUTION

To prevent corrosion, do not handle bearings with bare hands. Wear white gloves (D61).

39. Inspect for brinelling, pitting, spalling, corrosion, and burnishing of outer race (1) and inner races (2).

NOTE

Tarnish of cage is not reason for replacement.

40. Inspect for broken cage (3), pitting, nicks, spalling, corrosion, and scoring of ball bearings (4).

41. Replace upper mast bearing which has been subjected to high impact forces (e.g., crash landing, sudden stoppage, etc.).

NOTE

Axial and radial play of the upper mast bearing is normal; measurements are not required. Transmission oil sampling, chip detector, and visual inspections are the only methods used to determine the condition of the mast bearing.

42. Inspect upper mast bearing to damage limits shown. Reject bearing if limits are exceeded.

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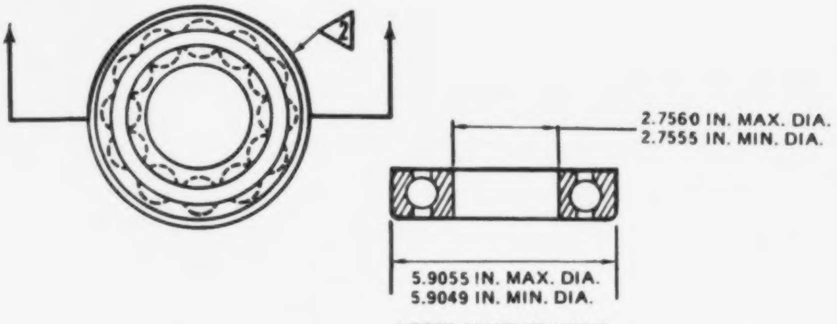
6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)


2
2.7560 IN. MAX. DIA.
2.7555 IN. MIN. DIA.
5.9055 IN. MAX. DIA.
5.9049 IN. MIN. DIA.

UPPER MAST BEARING

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	None
CORROSION	None
MAXIMUM AREA PER FULL DEPTH REPAIR	None
NUMBER OF REPAIRS	None
EDGE CHAMFER TO REMOVE DAMAGE	▷2 0.015 In

NOTES:

1. No cracks are permitted.

▷2 Edge breaks to remove damage are not permitted adjacent to ball paths.

3. Normal radial internal clearance is 0.017 - 0.019 inch and normal axial play is 0.065 inch maximum.

406040-127B

GO TO NEXT PAGE

CLEAN UPPER MAST BEARING LINER

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

43. Clean upper mast bearing liner with a wiping rag (D53) dampened with drycleaning solvent (D1).

44. Dry upper mast bearing liner with a clean wiping rag (D53).

INSPECT UPPER MAST BEARING LINER

45. Magnetic particle inspect upper mast bearing liner in accordance with TM 43-0103.

46. Inspect upper mast bearing liner to damage limits shown. Reject upper mast bearing liner if limits are exceeded.

REPAIR UPPER MAST BEARING LINER

47. Repair damage to upper mast bearing liner using sandpaper (D11).

48. Blend repaired area into surrounding area with crocus cloth (D8).

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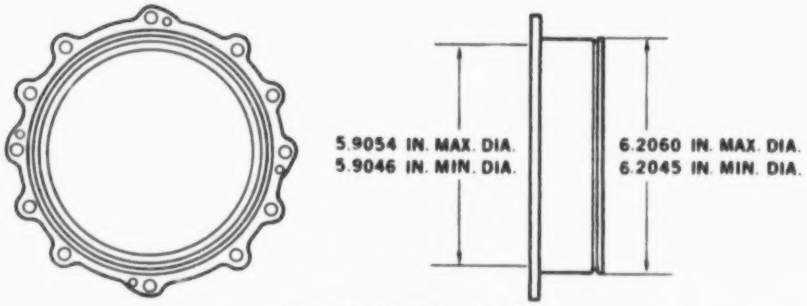
6-4-16. CLEAN, INSPECT, AND REPAIR COMPONENTS OF THE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)


5.9054 IN. MAX. DIA.
5.9046 IN. MIN. DIA.
6.2060 IN. MAX. DIA.
6.2045 IN. MIN. DIA.

UPPER MAST BEARING LINER

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS ▭ MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL DAMAGE	0.005 In. before and after repair
CORROSION	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 Sq. in.
NUMBER OF REPAIRS	4
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.

NOTE:
No cracks are permitted.

406040-128B

END OF TASK

6-4-17. ASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM)

This task covers: Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Powertrain Repairer Tool Kit
- Hoist
- Hydraulic Press (B192)
- Tool Set, Mast Nut (B141)
- Power Wrench Kit (B86)
- Bearing Removal/Installation Plate (B146)
- Vise
- Caliper Set, Micrometer, Outside
- Heat Gun (B240)

Parts:

- Packing
- Seal

Materials:

- Sealant (D29)
- Sealing Compound (D20)
- Gloves, White Cotton (D61)
- Corrosion Preventive Compound (D16)
- Wiping Rag (D53)
- Lockwire (D4)
- Lubricating Oil (D2 or D3)

Personnel Required:

- 66S Scout Helicopter Technical Inspector
- 68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

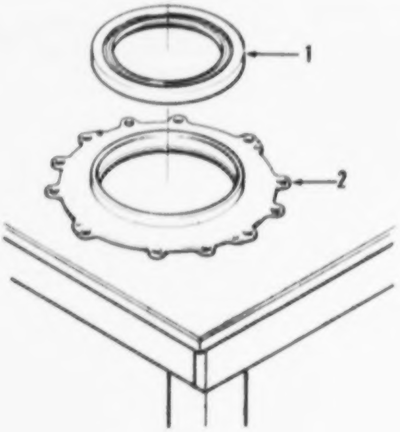
6-4-17. ASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

INSTALL SEAL IN SEAL AND BEARING RETAINING PLATE

1. Apply thin coat of sealant (D29) to outside diameter of seal (1) and bore of seal and bearing retaining plate (2).

2. Press seal (1) into seal and bearing retaining plate (2) using hydraulic press (B192).

3. Use wiping rag (D53) to remove excess sealant.

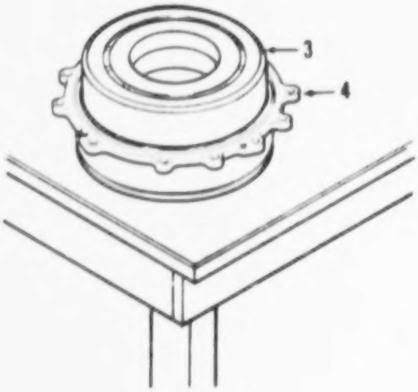


INSTALL BEARING IN BEARING LINER

NOTE

Bearing is a four piece bearing. First press outer race into liner, then install bearing cage and split inner race just prior to installation of mast.

4. Align bearing (3) with large chamfer up towards flange of bearing liner (4).



NOTE

Install mast upper bearing outer race with O.D. chamfer "UP" and inner race rings with dull burnish marks aligned. Inner race half, marked THRUST, in "DOWN" position.

WARNING

Use care when handling heat gun and heated parts. Wear asbestos gloves to avoid burns. If burn occurs, seek medical aid.

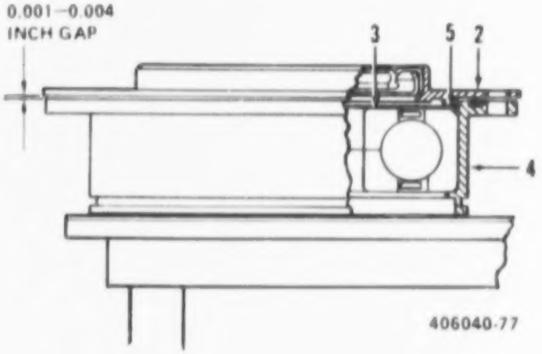
5. Using heat gun (B240), heat bearing liner (4) until outer race of bearing (3) can be pressed into bearing liner (4) with the aid of a hydraulic press.

PREPARE SHIM

6. Install shim (5) on bearing (3) in bearing liner (4).

7. Install seal (1) and bearing retainer plate (2) on bearing liner (4).

8. Measure gap between seal (1) and bearing retainer plate (2) and bearing liner (4) with feeler gage.



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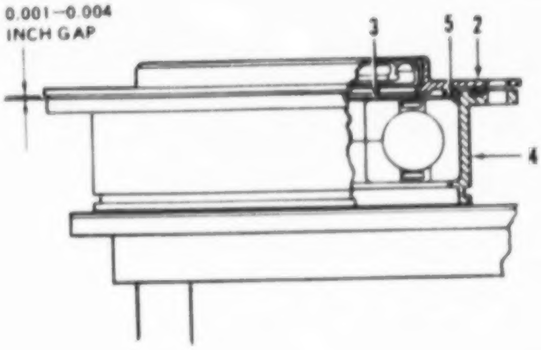
6-4-17. ASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)



9. Measure shim (5) with micrometer and add or delete shims to achieve a 0.001-0.004 inch gap.

10. Remove seal and bearing retainer plate (2) from bearing liner (4).

11. Remove shim (5) from bearing (3).

12. Cover seal and bearing retainer plate (2) and bearing (3) in bearing liner (4) with a clean wiping rag (D53) to prevent contamination, until installation.

INSTALL BEARING AND RETAINER ON MAST.

13. Place mast bearing removal/installation plate (6) (B146) on base of hydraulic press with chamfered side up.

14. Place bearing and liner (4) on bearing removal/installation plate (6).

15. Apply corrosion preventive compound (D16) to bearing journal to include the bottom two to three threads of the mast nut retaining threads.

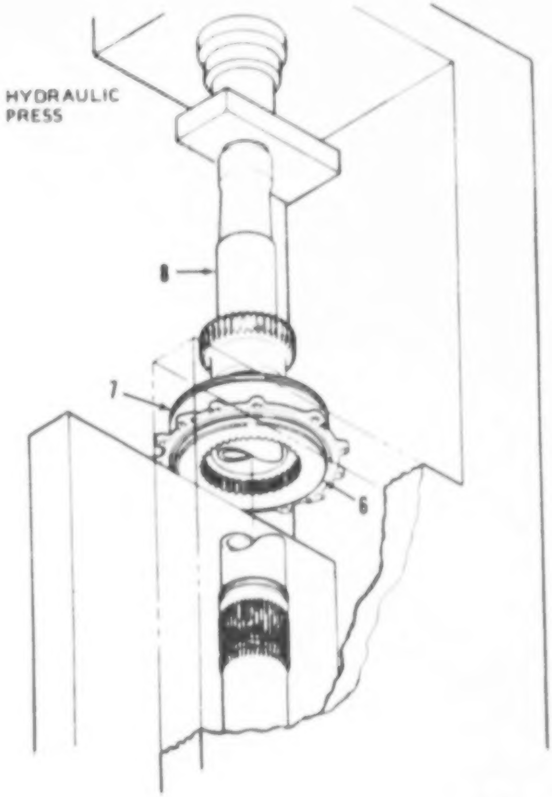
CAUTION

To prevent corrosion, do not handle mast with bare hands below upper mast bearing journal. Wear white gloves (D61).

16. Invert mast (8) and install through bearing and liner (7) and removal/installation plate (6).

17. Protect bottom of mast (8) from damage and press mast (8) into bearing and liner (7).

18. Remove excess corrosion preventive compound with clean wiping rag (D53).



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6-4-17. ASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

INSTALL MAST COMPONENTS

19. Install packing (9) into groove of bearing liner (4).

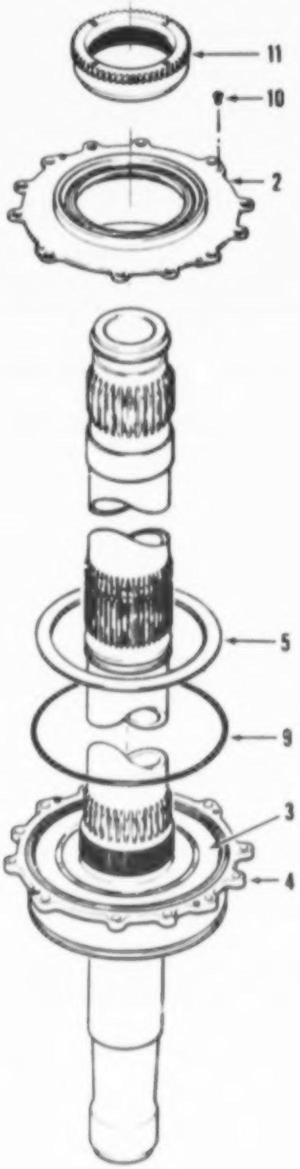
20. Install shim (5) on bearing (3).

INSPECT

21. Install seal and bearing retaining plate (2) on bearing liner (4).

22. Secure seal and bearing retaining plate (2) to bearing liner (4) with four screws (10).

23. Install upper mast bearing nut (11) on retaining threads of mast and hand tighten.



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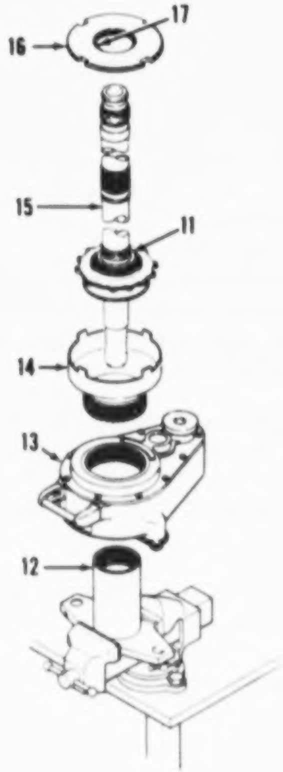
ASSEMBLY MAST NUT TOOL SET, POWER WRENCH AND MAST

24. Install tube (12) in vise and tighten vise to secure tube (12).

25. Slide power wrench (13) (B86) onto tube (12) being sure to engage studs on power wrench (13) with holes in tube (12) base.

26. Install adapter (14) into power wrench (13), being sure to mesh splines of adapter (14) and power wrench (13).



CAUTION

To prevent corrosion, do not handle bearing or mast assembly with bare hands below upper mast bearing liner. Wear white gloves (D61).

27. Install mast assembly (15) into adapter (14) being sure to mesh lower mast splines and splines in tube (12).

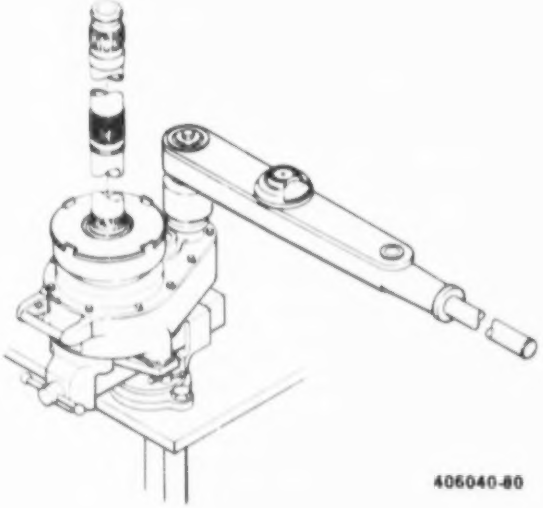
28. Install plate (16) on upper mast nut (11) and engage tabs on adapter (14).

29. Ensure that retaining nut (17) in plate (16) is seated against bearing nut (11) and splines are fully engaged.

CAUTION

Check power wrench for torque conversion chart.

30. Using torque wrench in power wrench kit, torque upper mast nut (11) **600-650 FOOT-POUNDS**.



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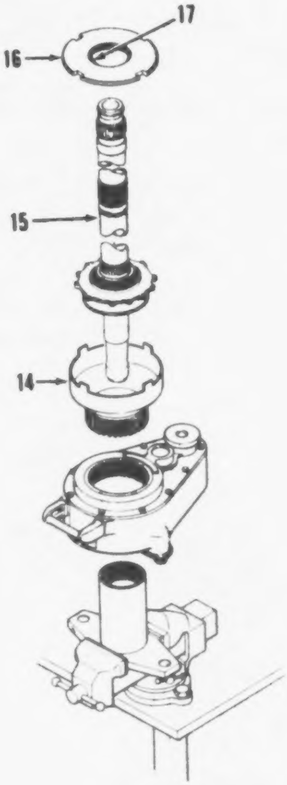
6-4-17. ASSEMBLE MAIN ROTOR MAST ASSEMBLY (AVIM) (CONT)

REMOVE MAST

31. Remove plate (16) from adapter (14) and mast assembly (15).



CAUTION

> To prevent corrosion, do not handle bearing or mast assembly with bare hands below upper mast bearing liner. Wear white gloves (D61).

32. Remove mast assembly (15) from adapter (14) and place mast assembly (15) on suitable work bench.

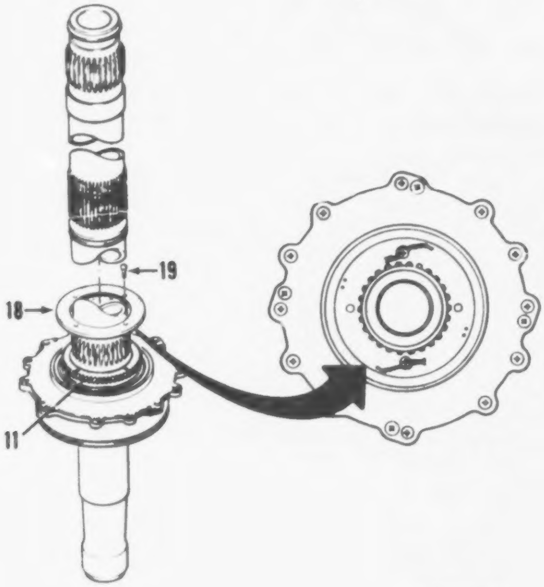
33. Disassemble and store power wrench kit and mast nut tool set.

34. Install lockplate (18) on upper mast nut (11) with two screws (19).

35. Secure two screws (19) to lockplate (18) with lockwire (D4).

INSPECT

36. Apply sealing compound (D20) to mating surface of mast splines and lockplate (18).



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END OF TASK

6-4-18 INSTALL MAIN ROTOR MAST ASSEMBLY

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Mast Clevis Tool (B165)
Lifting Eye Clevis (B263)

Parts:

Packing (2)

Materials:

Sealant (D29)
Fingerprint Remover, Corrosion Preventive (D66)
Lubricant (D2 or D3)
Gloves, White Cotton (D61)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 9-1240-778-20
TM 55-1520-248-MTF

NOTE

Ensure mast being installed is applicable to split cone configuration (Task 5-1-2).

GO TO NEXT PAGE

6-4-18. INSTALL MAIN ROTOR MAST ASSEMBLY (CONT)

1. Install packings (1 and 2) on bearing retainer (3) and lubricate packings with lubricant (D2 or D3).

CAUTION

> To prevent corrosion, do not handle bearing or mast assembly with bare hands below the upper mast bearing retainer plate. When handling mast, wear white gloves (D61).

2. Install mast lifting tool (B165) and lifting eye clevis (B263) on mast (4).

3. Connect hoist to lifting eye clevis, and lift mast (4).

4. With a heat gun, heat top case area where the mast mounts to the transmission (5).

CAUTION

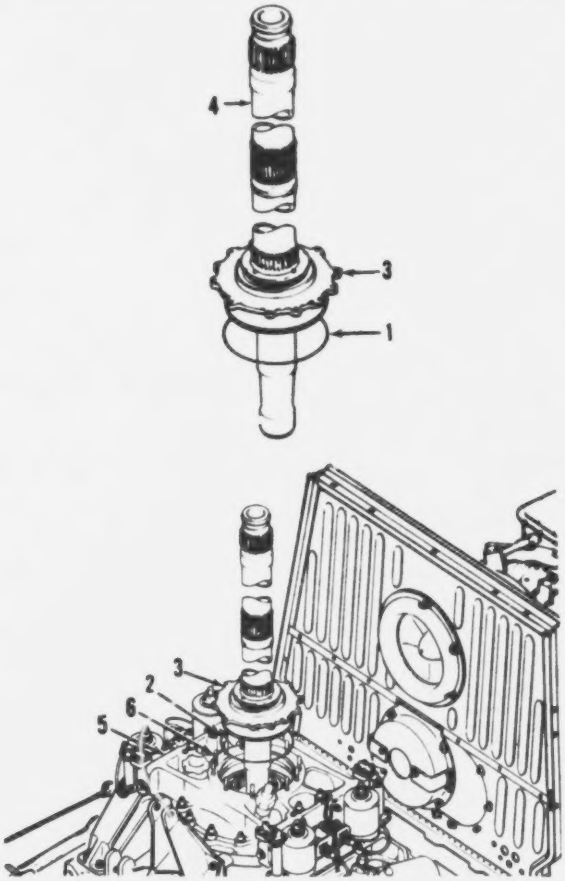
> Do not heat top case area over 250°F. Overheating can cause damage to the metal.

5. Apply a thin layer of sealant (D29) to the mating surface of the bearing retainer (3) and the transmission (5).

6. With hoist, lower mast into transmission (5), guiding the mast (4) by hand until the bearing retainer (3) contacts the transmission (5). Align the holes of the bearing retainer (3) with the studs (6) of the transmission (5) and lower the mast (4), slightly. Turn mast left and right until the mast splines engage the sun gear splines in the transmission.

CAUTION

> Ensure the mast surfaces do not contact or hit gears in transmission. Inadvertant contact causing scratches or nicks in the lower mast surface is cause for inspection and possible replacement of the mast.



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INSPECT

FOLLOW-ON MAINTENANCE

Install swashplate and support (Task 5-2-37).

Install main rotor hub and blades (Task 5-1-2).

Install torquemeter support or bearing assembly (Task 6-4-10).

Install standpipe electrical assembly (Task 6-4-2).

Install mast mounted sight (TM 9-1240-778-20).

Install air induction cowling (Task 4-2-4).

Install engine cowling (Task 2-1-24).

Install forward fairing (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

Static calibration (Task 9-7-13).

END OF TASK

Section V. FREEWHEELING UNIT

This section covers maintenance procedures for the freewheeling unit. These procedures include inspection (on helicopter), removal, cleaning, inspection (off helicopter), repair, and installation.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove Freewheeling Unit	6-5-1	6-168
Replace Forward Oil Seal Forward Seal Cap	6-5-2	6-174
Clean, Inspect, and Repair Components of Freewheeling Unit (AVIM)	6-5-3	6-179
Remove/Install Freewheeling Unit Tail Rotor Drive Output Oil Seal (AVIM)	6-5-4	6-206
Remove/Install Freewheeling Unit Tail Rotor Output Shaft Support Bearing (AVIM)	6-5-5	6-208
Remove/Install Freewheeling Unit Tail Rotor Drive Output Adapter Wear Sleeve (AVIM)	6-5-6	6-210
Install Freewheeling Unit	6-5-7	6-213

6-5-1. REMOVE FREEWHEELING UNIT

This task covers: Removal of Freewheeling Unit (On Helicopter)

INITIAL SETUP

Applicable Configurations:

- All

Tools:

- Aircraft Powertrain Tool Kit
- Conduit Pliers
- Spanner Assembly, Output Adapter (B127)
- Spanner Assembly, Input Adapter, (B134)
- Wrench Assembly, External Spline, (B124)
- Drain Hose (B59)
- Plastic Scraper (Work Aid)
- Suitable Oil Container
- Jackscrew Set (B94)

Materials:

- Masking Tape (D44)
- Barrier Material (D34)
- Tape (D33)
- Wiping Rag (D53)

Personnel Required:

- 68D Aircraft Powertrain Repairer (2)

Equipment Condition:

- Forward Fairing Removed (Task 2-1-21)
- Air Induction Cowling Removed (Task 4-2-1)
- Engine to Transmission Driveshaft Removed (Task 6-2-2)
- Forward Tail Rotor Assembly Shaft Removed (Task 6-6-1)

GO TO NEXT PAGE

6-5-1. REMOVE FREEWHEELING UNIT (CONT)

1. Gain access to freewheeling unit through engine left side panel.

2. Remove electrical connector (1) from chip detector (2).

3. Remove chip detector (2) from chip detector housing (3).

4. Install drain hose (4) (B59) into chip detector housing (3) and drain oil into suitable oil container.

5. When oil is completely drained from freewheeling unit, remove drain hose (4) and install chip detector (2) into chip detector housing (3).

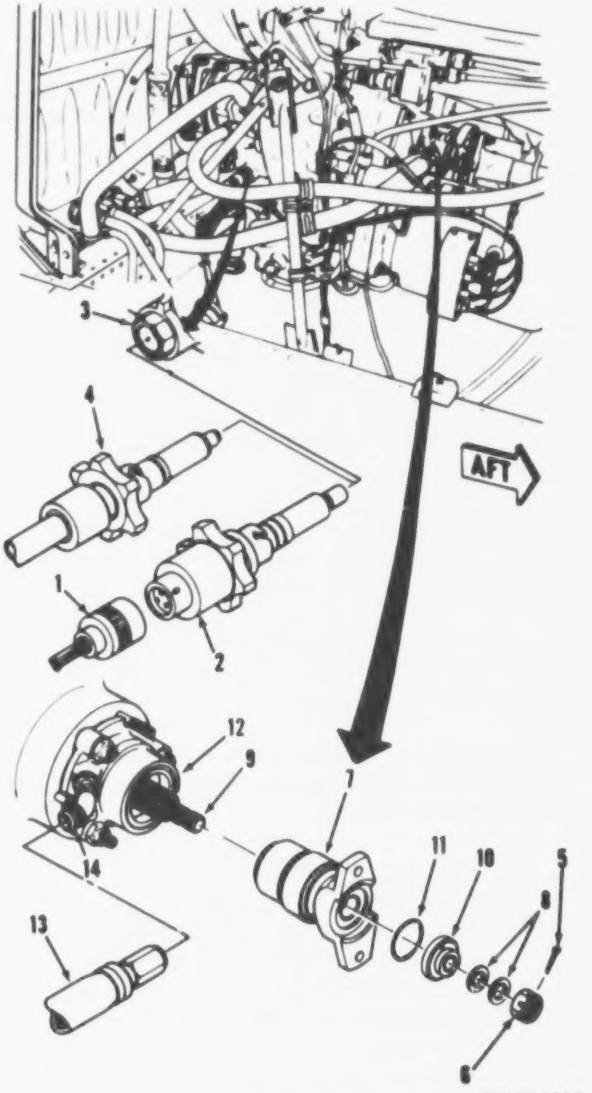
6. Remove and discard cotter pin (5) from adapter retaining nut (6).

7. Install spanner assembly (B127) on output adapter (7) and secure in place with accompanying hardware.

8. While holding output adapter (7) with spanner assembly (B127), remove nut (6) and washers (8) from freewheeling unit shaft (9).

9. Using plastic scraper remove sealant from washer (10) and output adapter (7).

10. Remove washer (10) with packing (11) from freewheeling unit shaft (9).



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NOTE

When adapter (7) is removed, oil will drain from seal cap (12) to the engine deck.

11. Remove output adapter (7) from aft bearing and seal cap (12) and freewheeling unit shaft (9).

12. Disconnect oil inlet line (13) from elbow fitting (14) on aft bearing and seal cap (12).

13. Cap oil line (13) and tag and identify line for installation location.

GO TO NEXT PAGE

6-5-1. REMOVE FREEWHEELING UNIT (CONT)

14. Remove three nuts (15) and three washers (16) from support studs (17).

15. Remove aft bearing and seal cap (12) with packing (18) from output support (19) with conduit pliers. Discard packing (18).

CAUTION

Cone set is a matched set. Remove and install as a set.

16. Remove spacer (20) and cone set (21) from freewheeling shaft (9).

17. Remove retainer ring (22) from output adapter bolt (23).

18. Using a single jackscrew from jackscrew set (B94), remove output shaft plug assembly (24) with packing (25). Discard packing (25).

19. Install input adapter spanner (B134) on main driveshaft adapter (26) and secure in place with accompanying hardware.

20. While holding main driveshaft adapter (26) in place, remove output adapter bolt (23), using external spline wrench (B124).

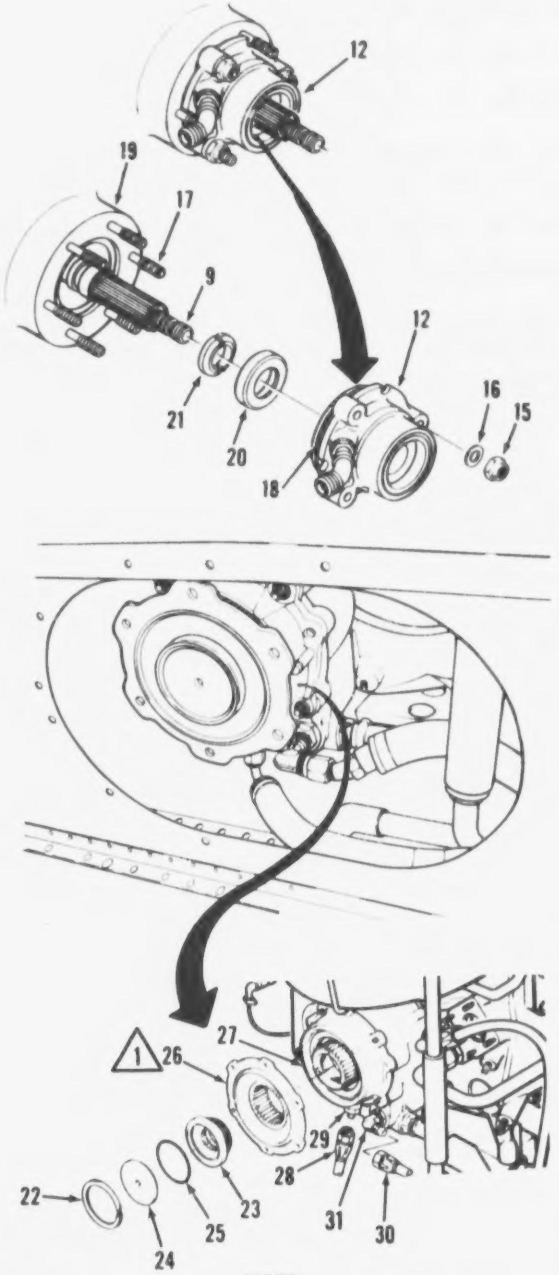
CAUTION

Shaft assemblies with 406-040-500-103 part number shall use 406-040-542-101 main driveshaft adapter. Shaft assemblies with 406-040-500-111 part number shall use 406-040-542-103 main driveshaft adapter. Main driveshaft adapters stated above shall not be intermixed from one shaft assembly to another.

21. Remove main driveshaft adapter (26) from freewheeling unit output shaft assembly (27).

22. Disconnect inlet oil line (28) from forward cap fitting (29).

23. Disconnect return oil line (30) from elbow fitting (31).



NOTE

1 Shaft assembly 406-040-500-103 uses main driveshaft adapter 406-040-542-101.
Shaft assembly 406-040-500-111 uses main driveshaft adapter 406-040-542-103.

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GO TO NEXT PAGE

6-5-1. REMOVE FREEWHEELING UNIT (CONT)

24. Remove four nuts (32) and eight washers (33) securing output shaft assembly (27) to housing asseembly (34).

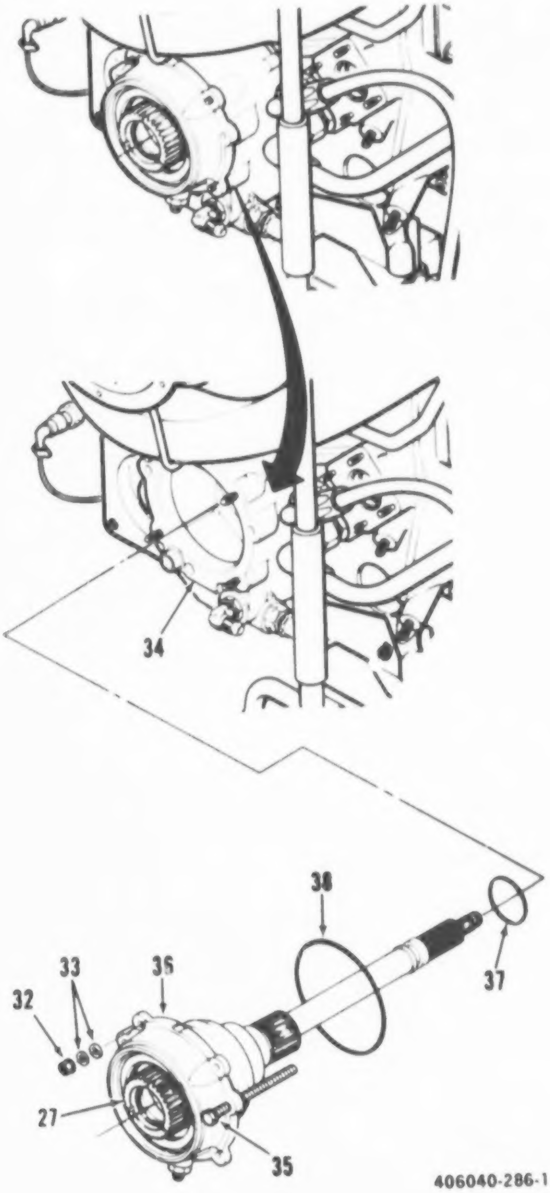
CAUTION

> Jackscrews must be turned evenly while removing output shaft, or damage to output shaft or engine accessory gears will result.

25. Install three jackscrews (35) in threaded holes in forward seal cap (36).

26. Remove output shaft assembly (27) with packings (37 and 38) using jackscrews (35). Discard packings (37 and 38).

27. Place output shaft assembly (27) on suitable surface and cover with a clean wiping rag (D53) to prevent contamination.



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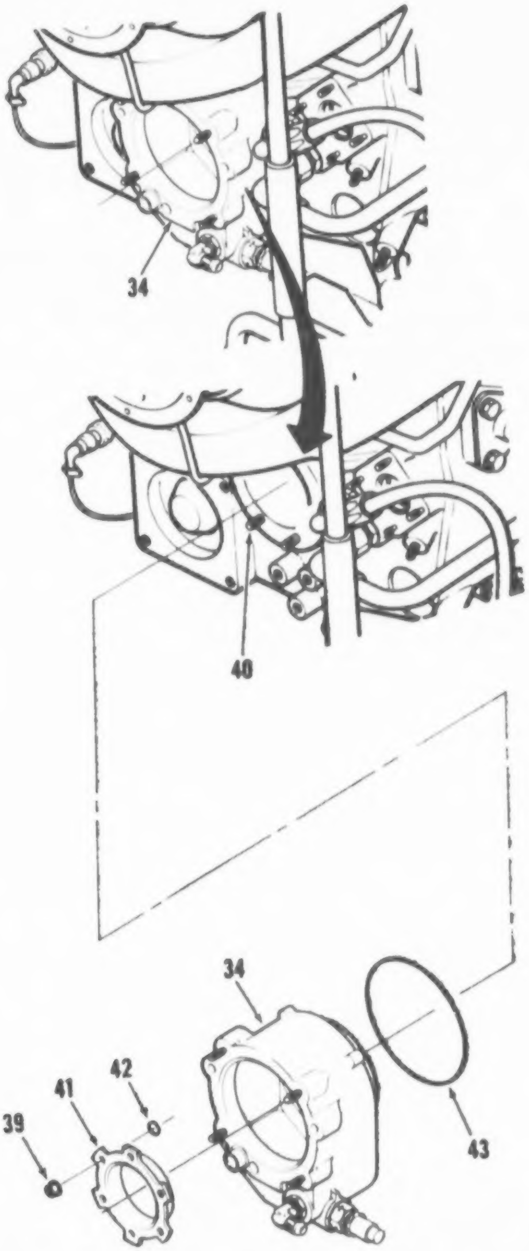
6-5-1 REMOVE FREEWHEELING UNIT (CONT)

28. Remove six nuts (39) from mounting studs (40).

29. Remove housing assembly (34) pilot ring (41) with packing (43). Discard packing (43).

30. Remove pilot ring (41) and six packings (42) from housing assembly (34). Discard packings (42).

31. Cover openings in engine accessory gear case with barrier material (D34) and secure with tape (D33).



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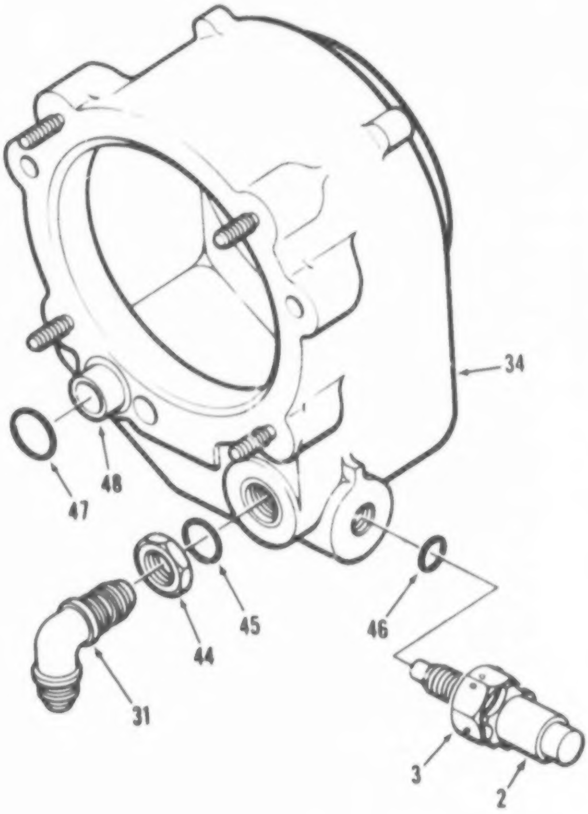
6-5-1. REMOVE FREEWHEELING UNIT (CONT)

32. Remove elbow fitting (31) from housing assembly (34) by loosening jamnut (44) and turning elbow fitting (31). Remove and discard packing (45).

33. Cut lockwire and remove chip detector (2) and chip detector housing (3) with packing (46) from housing assembly (34). Discard packing (46).

34. Remove packing (47) from housing assembly oil transfer tube (48). Discard packing (47).



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END OF TASK

6-5-2. REPLACE FORWARD OIL SEAL FORWARD SEAL CAP

This task covers: Replacement of oil seal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Powertrain Repairer Tool Kit
- Adapter 3/4 Inch Square Male End 1/2 Inch Square Female End
- Arbor Press
- Jackscrew Set (B94)
- Maintenance Platform
- Plastic Scraper (Work Aid)
- Seal Tool (B135)
- Spanner Set, Input Adapter (B127)
- Handle, Socket Wrench, Ratchet, 1/2 Inch
- Tool Set, Driveshaft (B159)
- Torque Wrench, 30-250 Foot-Pounds
- Wrench, Seal Nut (B123)
- Wrench, Assembly, External Spline (B124)
- Goggles

Parts:

- Packings
- Seal

Materials:

- Lockwire (D4)
- Methyl-Ethyl-Ketone (MEK) (D6)
- Sealant (D29)
- Rubber Gloves (D119)
- Cleaning Cloth (D56)

Personnel Required:

- 66S Scout Helicopter Technical Inspector
- 68D Aircraft Powertrain Repairer
- Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

- Forward Fairing Removed (Task 2-1-21)
- Air Induction Cowling Removed (Task 4-2-1)
- Engine to Transmission Driveshaft Removed (Task 6-2-2)
- Forward Tail Rotor Assembly Shaft Removed (Task 6-6-1)

GO TO NEXT PAGE

6-5-2 REPLACE FORWARD OIL SEAL FORWARD SEAL CAP (CONT)

REMOVE

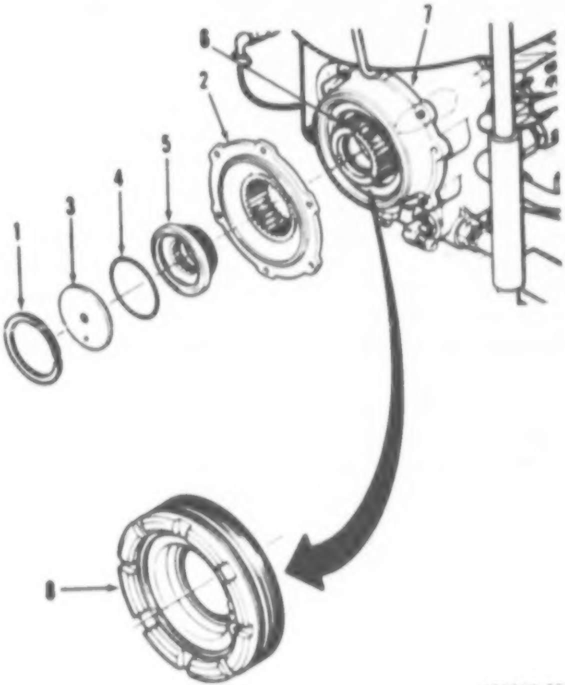
1. Gain access to freewheeling unit through left side engine panel.

2. Remove retainer ring (1) from output adapter bolt (5).

3. Using a single jackscrew from jackscrew set (B94), remove output shaft plug assembly (3) with packing (4). Discard packing (4).

4. Install input adapter spanner set (B127) on main driveshaft adapter (2) and secure in place with accompanying hardware.

5. While holding main driveshaft adapter (2) in place, remove output adapter bolt (5), using external spline wrench (B124).



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CAUTION

Shaft assemblies with 406-040-500-103 part number shall use 406-040-542-101 main driveshaft adapter, 406-040-543-101 duplex bearing nut and 406-040-581-101 seal assembly. Shaft assemblies with 406-040-500-111 part number shall use 406-040-542-103 main driveshaft adapter, 406-040-543-103 duplex bearing nut and 406-340-102-101 seal assembly. Individual parts as stated above shall not be intermixed from one shaft assembly to another.

6. Remove main driveshaft adapter (2) from freewheeling unit output shaft (6).

7. Remove lockwire, two places, from seal cap assembly (7) and duplex bearing nut (8).

8. Remove duplex bearing nut (8) from seal cap assembly (7) using seal nut wrench (B123) and 1/2 inch square drive ratchet and adapter.

GO TO NEXT PAGE

6-5-2. REPLACE FORWARD OIL SEAL FORWARD SEAL CAP (CONT)

9. Remove retaining ring (9) from duplex bearing nut (8). Discard packing (10).

NOTE

Forward seal consists of two separate pieces: the seal cup (11) assembles into duplex bearing nut (8); the seal ring (12) assembles against duplex ball bearings.

10. Position duplex bearing nut (8) large slot (forward) face down on arbor press work bed. Insert grooved, long shank end seal tool (B135) into duplex bearing nut (8) until it contacts inside diameter of forward seal cup (11) from nut (8). Discard seal cup (11).

11. Remove forward seal ring (12) using two phenolic or wood extractors of local manufacture. Insert extractors into gap between cap assembly (7) and seal half and carefully unseat ring (12) and packing (13).

12. Using plastic scraper remove sealant from duplex bearing nut (8).

CLEAN

WARNING

MEK (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

13. Clean the outside diameter of forward seal and mating surface in duplex bearing nut (8) housing using methyl-ethyl-ketone (D6).

14. Wipe surfaces dry, using lint-free, clean cloth (D56).

INSPECT

15. Inspect duplex bearing nut (8) for wear and damage (Task 6-5-3).

REPAIR

16. Repair duplex bearing nut (8) (Task 6-5-3).

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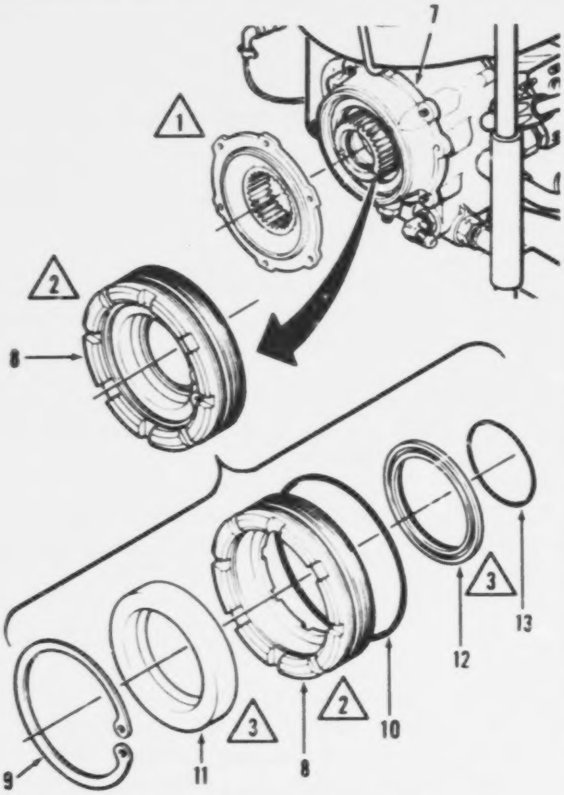

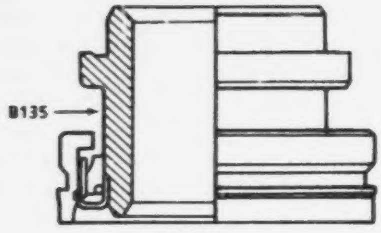

REMOVAL

NOTES

1 **Shaft assembly 406-040-500-103 uses main driveshaft adapter 406-040-542-101.**
Shaft assembly 406-040-500-111 uses main driveshaft adapter 406-040-542-103.

2 **Shaft assembly 406-040-500-103 uses duplex bearing nut 406-040-543-101.**
Shaft assembly 406-040-500-111 uses duplex bearing nut 406-040-543-103.

3 **Shaft assembly 406-040-500-103 uses seal assembly 406-040-581-101.**
Shaft assembly 406-040-500-111 uses seal assembly 406-340-102-101.

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6-5-2. REPLACE FORWARD OIL SEAL FORWARD SEAL CAP (CONT)

INSTALL

CAUTION

Shaft assemblies with 406-040-500-103 part number shall use 406-040-542-101 main driveshaft adapter, 406-040-543-101 duplex bearing nut and 406-040-581-101 seal assembly. Shaft assemblies with 406-040-500-111 part number shall use 406-040-542-103 main driveshaft adapter, 406-040-543-103 duplex bearing nut and 406-340-102-101 seal assembly. Individual parts as stated above shall not be intermixed from one shaft assembly to another.

NOTE

Forward seal consists of two matched halves. Halves shall not be replaced separately.

17. Turn duplex bearing nut (8) over so that small slots (aft) side rests on work bed of arbor press. Apply a thin film of sealant (D29) to exterior surface of forward seal cup (11) and adjacent to retaining ring groove of duplex bearing nut (8).

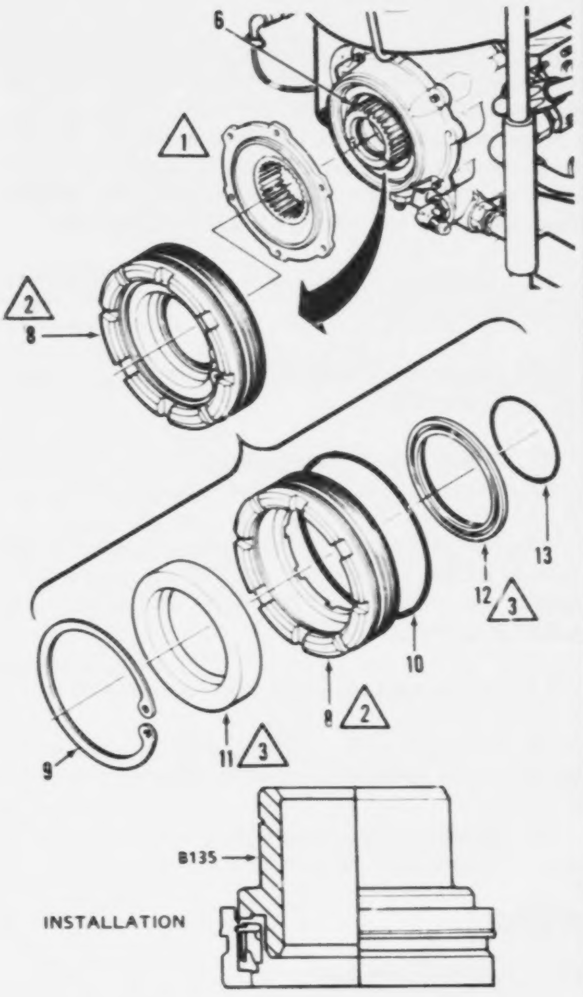
18. Position seal cup (11), open face down, on inside diameter of duplex bearing nut (8). Slide shouldered end of installation/removal tool (B135) into inside diameter of seal cup. Press seal cup (11) into duplex bearing nut (8) until seated. Remove installation/removal tool (B135) from duplex bearing nut (8) and arbor press.

19. Trim excess sealant (D29) from seal cup (11) and duplex bearing nut (8). Install retaining ring (9).

20. Install packing (10) in groove of duplex bearing nut (8).

21. Position packing (13) on output shaft (6) against duplex ball bearing.

22. Seat forward seal ring (12) against duplex ball bearings. Turn seal ring (12) to pick up packing (13).



NOTES

△1 Shaft assembly 406-040-500-103 uses main driveshaft adapter 406-040-542-101.
Shaft assembly 406-040-500-111 uses main driveshaft adapter 406-040-542-103.

△2 Shaft assembly 406-040-500-103 uses duplex bearing nut 406-040-543-101.
Shaft assembly 406-040-500-111 uses duplex bearing nut 406-040-543-103.

△3 Shaft assembly 406-040-500-103 uses seal assembly 406-040-581-101.
Shaft assembly 406-040-500-111 uses seal assembly 406-340-102-101.

406040-607

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6-5-2. REPLACE FORWARD OIL SEAL FORWARD SEAL CAP (CONT)

23. Thread duplex bearing nut (8) into seal cap assembly (7). Position seal nut wrench (B123) on duplex bearing nut (8). Attach 1/2 inch square drive ratchet and adapter. Tighten duplex bearing nut (8). Remove ratchet and adapter. Attach 3/4 inch square drive torque wrench to duplex bearing nut. Torque duplex bearing nut **150-200 FOOT-POUNDS.**

24. Lockwire duplex bearing nut (8) two places using lockwire (D4).

25. Install main driveshaft adapter (2) on splines of output shaft (6).

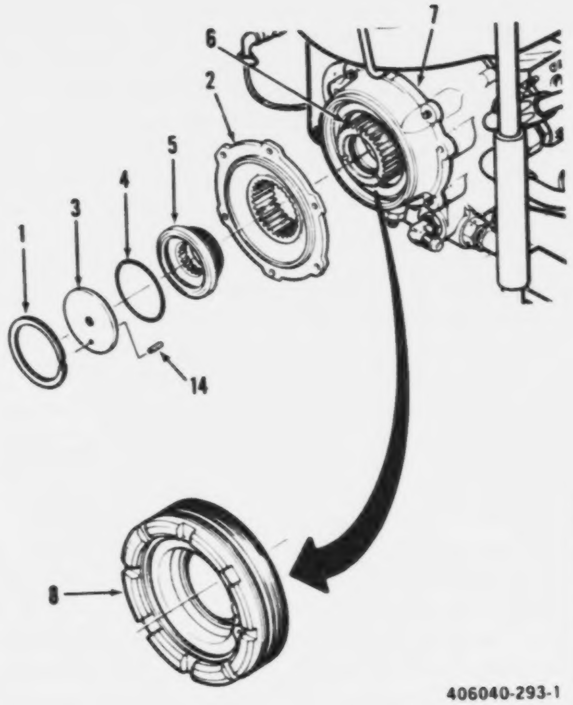
26. Install input adapter spanner set (B127) on main driveshaft adapter (2) and secure in place.

27. While holding main driveshaft adapter (2) with input adapter spanner set (B127), torque output adapter bolt (5) **150-175 FOOT-POUNDS** with external spline wrench (B124).

28. Install packing (4) on shaft plug assembly (3).

29. Align pin (14) on output shaft plug assembly (3) with an aligned hole in output adapter bolt (5).

30. Secure output shaft plug assembly (3) in output adapter bolt (5) with retainer ring (1).



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INSPECT

FOLLOW-ON MAINTENANCE

Install forward tail rotor shaft assembly (Task 6-6-1).

Install engine to transmission driveshaft (Task 6-2-2).

Install air induction cowling (Task 4-2-4).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MTF (TM 55-1520-248-MTF).

END OF TASK

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM)

This task covers: Clean, Inspect, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Dial Indicator, 0-0.200 Inches
Inside Micrometer, 2-12 Inches
Outside Micrometer Set, 0-6 Inches
Telescoping Gage Set, 5/16-6 Inches
Inspection Pin, 0.120 Inch Diameter
Inspection Pin, 0.096 Inch Diameter
Inspection Pin, 0.060 Inch Diameter
Inspection Pin, 0.054 Inch Diameter

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Sandpaper 400 Grit (D11)
Crocus Cloth (D8)
Rubber Gloves (D119)
Methyl-Ethyl-Keytone (D6)
Chemical Conversion Coating (D12)
Masking Tape (D44)
Barrier Material (D34)
Paint Remover (D101)
Polyamide Epoxy Primer (D13)
Lubricant (D2 or D3)
Brush Cadmium Plating (D106)
Fingerprint Remover, Corrosion Preventive (D66)
Abrasive Pads (D89)
Steel Wool (D57)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

References:

TM 55-1500-345-23
TM 43-0103
TM 55-1500-204-25/1

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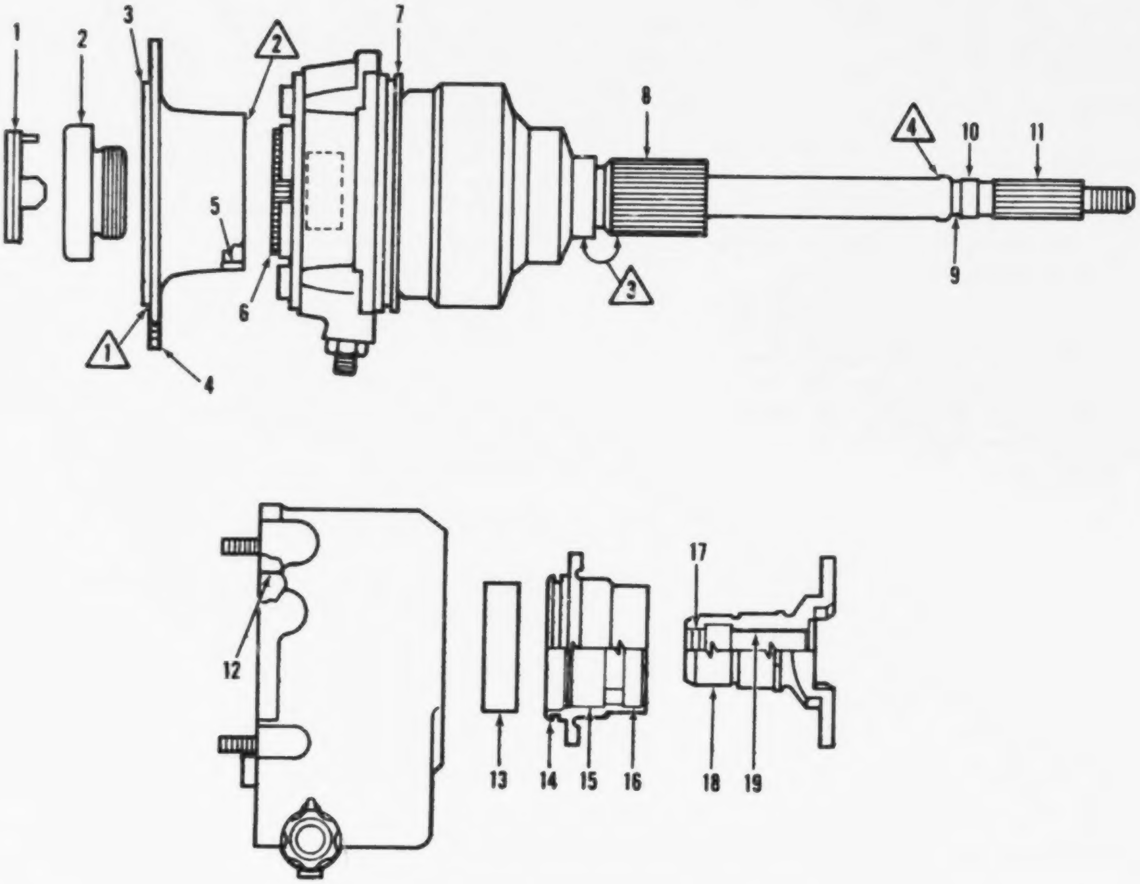
6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)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FREEWHEELING UNIT OUTPUT SHAFT ASSEMBLY

406040-144-1A

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

Table 6-5-1. Wear Limits — Freewheeling Unit

ITEM	NOMENCLATURE		MIN.	MAX.
1	Output Shaft Plug	OD	2.160	2.163
2	Adapter Bolt — Packing Seat	ID	2.165	2.168
3	Main Driveshaft Adapter, Engine to Transmission Drive Shaft Adapter Shoulder	OD	3.917	3.919
4	Main Driveshaft Adapter — Holes	ID	0.265	0.275
5	Transmission Drive Adapter — Spline (use 0.108 inch diameter pins)	Between pins	1.907	1.912
6	Shaft Spline — Outer (use 0.120 inch diameter pins)	Over pins	2.235	2.241
7	Pilot Diameter	OD	4.060	4.062
8	Clutch — Spline (use 0.096 inch diameter pins)	Over pins	1.344	1.347
9	Shaft — Tail Rotor Drive Cone Seat	OD	0.660	0.662
10	Output Adapter — Pilot	OD	0.749	0.743
11	Shaft Spline — Inner (use 0.060 inch diameter pins)	Over pins	0.765	0.770
12	Housing — Forward Seal Cap Seat	ID	4.062	4.064
13	Bearing — Aft	OD	2.046	2.047
14	Aft Bearing and Seal Cap — Pilot	OD	2.500	2.501
15	Aft Bearing and Seal Cap — Bearing Seat	ID	2.046	2.047
16	Aft Bearing and Seal Cap — Seal Seat	ID	1.999	2.002
17	Output Adapter — Mating Bore	ID	0.750	0.750
18	Output Adapter — Aft Bearing Journal	OD	1.239	1.240
19	Output Adapter — Spline (use 0.054 inch diameter pins)	Between pins	0.611	0.615

NOTES:

1▷ Total indicated runout of engine to transmission mating surface is 0.0004 inch maximum.

2▷ Total indicated runout of adapter mating surface is 0.0007 inch maximum.

3▷ No repair of damage allowed.

4▷ Total indicated runout of shaft cone set seat is 0.001 inch maximum.

5. Maximum allowable wear in roller bearing path on the diameter is 0.0002 inch determined by the difference in the diameter in the worn and unworn areas.

6. **Ensure pins are located in wear area.**

406040-144-2B

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

CLEAN OUTPUT SHAFT PLUG ASSEMBLY

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean output shaft plug assembly with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry output shaft plug assembly with a clean wiping rag (D53).

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

INSPECT OUTPUT SHAFT PLUG ASSEMBLY

3. Inspect output shaft plug assembly for wear in accordance with Table 6-5-1.

4. Fluorescent penetrant inspect output shaft plug assembly in accordance with TM 43-0103.

5. Inspect output shaft plug assembly to limits shown. Reject output shaft plug if limits are exceeded.

REPAIR OUTPUT SHAFT PLUG ASSEMBLY

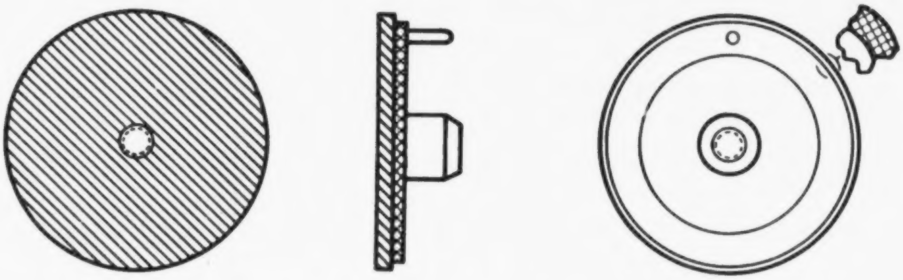
6. Repair damage to output shaft plug assembly using sandpaper (D11).

7. Blend repaired area into surrounding area with crocus cloth (D8).

INSPECT

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



OUTPUT SHAFT PLUG

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS		
	▦	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL DAMAGE			
WEAR	N/A	N/A	N/A
SCORING	None permitted	0.005 In.	0.005 In.
CORROSION	None permitted	None permitted	0.003 In.

406040-157A

GO TO NEXT PAGE

CLEAN ADAPTER BOLT

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

8. Clean adapter bolt with a wiping rag (D53) dampened with drycleaning solvent (D1).

9. Dry adapter bolt with a clean wiping rag (D53).

INSPECT ADAPTER BOLT

10. Inspect adapter bolt for wear in accordance with Table 6-5-1.

11. Magnetic particle inspect adapter bolt in accordance with TM 43-0103.

12. Inspect adapter bolt to limits shown. Reject bolt if limits are exceeded.

REPAIR ADAPTER BOLT

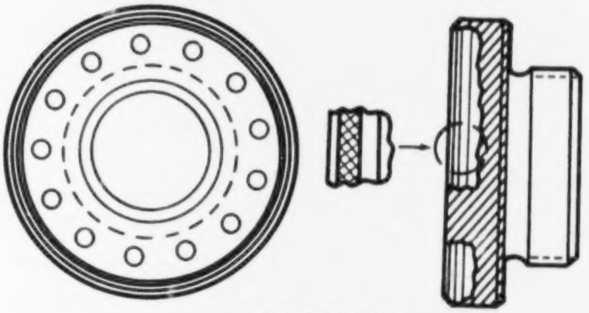
13. Repair damage to adapter bolt, using sandpaper (D11).

14. Blend repaired area into surrounding area with crocus cloth (D8).

INSPECT

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



ADAPTER BOLT

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS ▩	 ▨	 ☐
	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL DAMAGE			
WEAR	2.167 In. Diameter	N/A	N/A
SCORING	None permitted	0.015 In.	N/A
CORROSION	None permitted	None permitted	None permitted
THREAD DAMAGE			
SCORING	None permitted		

406040-158A

GO TO NEXT PAGE

CLEAN MAIN DRIVESHAFT ADAPTER

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

15. Clean main driveshaft adapter with a wiping rag (D53) dampened with drycleaning solvent (D1).

16. Dry main driveshaft adapter with a clean wiping rag (D53).

INSPECT MAIN DRIVESHAFT ADAPTER

17. Inspect main driveshaft adapter wear in accordance with Table 6-5-1.

18. Magnetic particle inspect main driveshaft adapter in accordance with TM 43-0103.

19. Inspect main driveshaft adapter to limits shown. Reject adapter if limits are exceeded.

REPAIR MAIN DRIVESHAFT ADAPTER

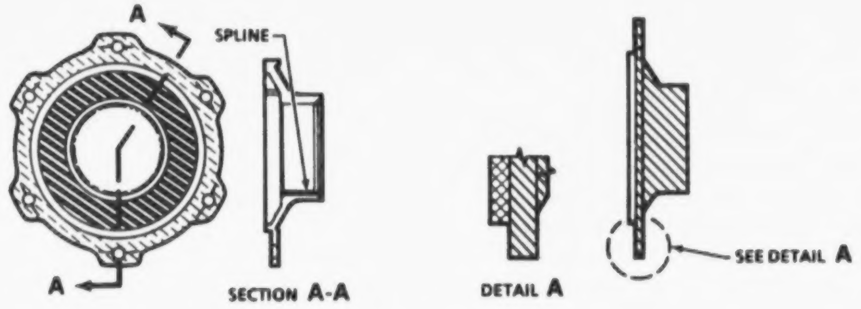
20. Repair damage to main driveshaft adapter, using sandpaper (D11).

21. Blend repaired area into surrounding area with crocus cloth (D8).

INSPECT

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



MAIN DRIVESHAFT ADAPTER

DAMAGE LOCATION SYMBOLS

	▩	▨	▧	▦
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH			
WEAR	3.9175 In. Minimum diameter	N/A	N/A	N/A
SCORING	N/A	0.002 In.	0.002 In.	0.002 In.
CORROSION	None permitted	0.001 In.	0.002 In.	0.002 In.
SPLINE DAMAGE				
WEAR	1.9078 - 1.9157 In. between 0.108 in. diameter pins (flatted)			
SCORING	0.002 In.			
CORROSION	None permitted			

NOTE:

Inspection data applies to 406-040-542-101/-103 main driveshaft adapters.

406040-161C

GO TO NEXT PAGE

CLEAN FORWARD SEAL CAP, CLUTCH, AND SHAFT ASSEMBLY

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

22. Clean forward seal cap, clutch, and shaft assembly with a wiping rag (D53) dampened with drycleaning solvent (D1).

23. Dry forward seal cap, clutch, and shaft assembly with a clean wiping rag (D53).

INSPECT FORWARD SEAL CAP, CLUTCH, AND SHAFT ASSEMBLY

24. Inspect forward seal cap, clutch, and shaft assembly in accordance with Table 6-5-1.

NOTE

Exercise care to avoid corrosion to bearing surfaces, and avoid getting fingerprints on bearing surfaces. Parts should be lubricated immediately after inspection using lubricant (D2 or D3). Remove fingerprints with fingerprint remover (D66) if needed.

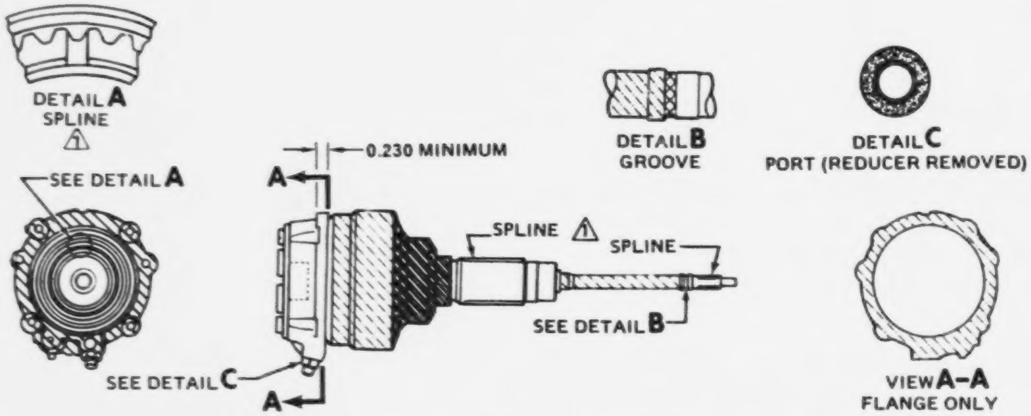
25. Inspect forward seal for leakage. Maximum allowable leakage is 4 drops per hour or 3 drops per minute from all sources.

NOTE

4 drops per minute equals approximately 22 milliliters (0.05 pint) during a two hour flight.

GO TO NEXT PAGE

6-5-3 CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)


DETAIL A
SPLINE
1
SEE DETAIL A
0.230 MINIMUM
A
A
DETAIL B
GROOVE
DETAIL C
PORT (REDUCER REMOVED)
SPLINE 1
SPLINE
SEE DETAIL B
SEE DETAIL C
VIEW A–A
FLANGE ONLY

FORWARD SEAL, CAP, CLUTCH, AND SHAFT ASSEMBLY

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS						
	▩	▧	▨	■	▒	▧	□
MECHANICAL DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH						
WEAR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SCORING	None permitted	0.002 In. deep	0.002 In. deep	0.002 In. deep	0.002 In. deep	0.005 In. deep	N/A
CORROSION	None permitted	None permitted	0.001 In. deep	0.002 In. deep	0.005 In. deep	0.002 In. deep	N/A

SPLINE DAMAGE

WEAR 0.765-0.770 In. over 0.060 in. diameter pins

SCORING 0.002 In. deep

NOTES:

1. See Table 6-5-1
2. All dimensions are in inches unless otherwise specified.

406040-160B

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

26. Visually inspect splines (1) for chipped or broken teeth.

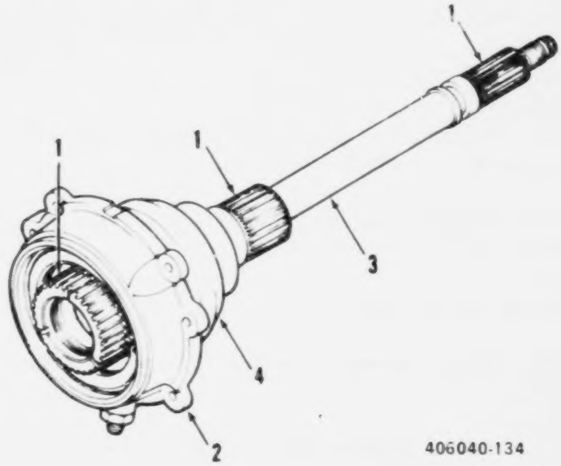
27. Visually inspect forward seal cap (2) for corrosion, scratches, nicks, and cracks.

28. Inspect shaft (3) for corrosion, wear, and cracks.

29. Visually inspect clutch assembly (4) for brinnelling or other damage. Inspect clutch (4) bearing for smoothness and freedom of rotation by holding shaft (3) and rotating clutch (4) by hand.

30. Inspect forward seal cap (2) bearing for smoothness and freedom of rotation by holding shaft (3) and turning forward cap (2) by hand.

31. Inspect shaft (3) to limits shown. Reject shaft (3) if limits are exceeded.



406040-134

REPAIR OF SHAFT ASSEMBLY

32. Repair damage to shaft (3) using sandpaper (D11).

33. Blend repaired area into surrounding area with crocus cloth (D8).

INSPECT

CLEAN PILOT RING

WARNING

> Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

34. Clean pilot ring with a wiping rag (D53) dampened with drycleaning solvent (D1).

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

35. Dry pilot ring with a clean wiping rag (D53).

INSPECT PILOT RING

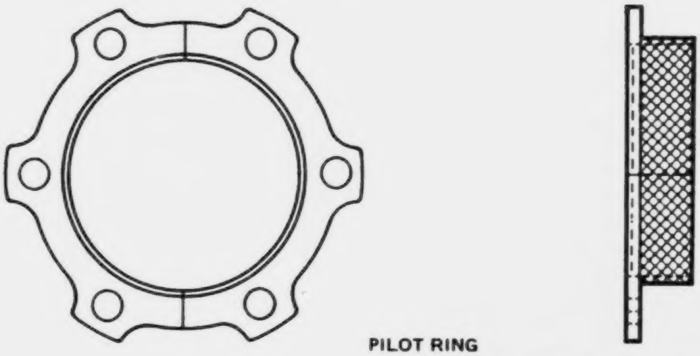
36. Fluorescent penetrant inspect pilot ring in accordance with TM 43-0103.

37. Inspect pilot ring to limits shown. Reject pilot ring if limits are exceeded.

REPAIR PILOT RING

38. Repair damage to pilot ring using sandpaper (D11).

39. Blend repaired are into surrounding area with crocus cloth (D8).



PILOT RING

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▨	▭
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE		
WEAR	N/A	N/A
SCORING	None permitted	0.010 In.
CORROSION	None permitted	None permitted

406040-159A

GO TO NEXT PAGE

CLEAN HOUSING ASSEMBLY

WARNING

Drycleaning solvent (D1) and paint remover (D101) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

40. Clean housing assembly with a wiping rag (D53) dampened with drycleaning solvent (D1).

41. Dry housing assembly with clean wiping rag (D53).

42. Remove polyamide epoxy primer finish with paint remover (D101).

INSPECT HOUSING ASSEMBLY

43. Inspect housing assembly for wear in accordance with Table 6-5-1.

44. Fluorescent penetrant inspect housing assembly in accordance with TM 43-0103.

45. Inspect housing assembly to damage limits shown. Reject housing if limits are exceeded.

REPAIR HOUSING ASSEMBLY

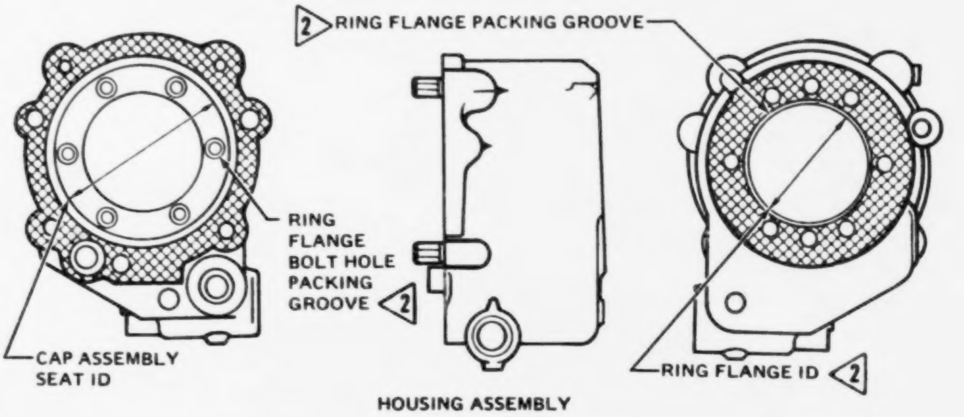
46. Repair damage to housing assembly using sandpaper (D11).

47. Blend repaired area into surrounding area with crocus cloth (D8).

48. Replace threads damaged studs, or replace studs which must be removed for treatment of corrosion on housing (TM 55-1500-204-25/1).

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)


2 RING FLANGE PACKING GROOVE
RING FLANGE BOLT HOLE PACKING GROOVE 2
CAP ASSEMBLY SEAT ID
RING FLANGE ID 2
HOUSING ASSEMBLY

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	▨ MAXIMUM DAMAGE AND REPAIR DEPTH	☐ MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL DAMAGE	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION (PITTING)	0.020 In. before and after repair	0.020 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.25 Sq. in.	0.50 Sq. in.
NUMBER OF REPAIRS	2	5
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In.	0.030 In.

	Minimum	Maximum
CAP ASSEMBLY SEAT ID	4.062 In.	4.064 In.
RING FLANGE ID	2.502 In.	2.504 In.

NOTES:

1. Inspect stud threads and bolt holes for corrosion. Any corrosion in the stud threads is cause for rejection of housing assembly. In the area of the bolt holes, maximum pitting depth allowed is 0.030 inch. Not more than 20 percent of the bolt hole wall shall be pitted.
2. Inspect packing grooves on ring flange and ring flange bolt holes for corrosion. Inspect ring flange ID for corrosion. Any corrosion that cannot be removed with abrasive pads (D24) or steel wool (D57) is cause for rejection of housing assembly.
3. No cracks are permitted.

406040-163B

GO TO NEXT PAGE

WARNING

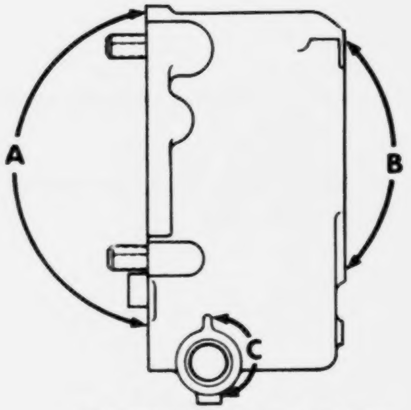
Polyamide epoxy primer (D13) and chemical conversion coating (D12) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

49. Apply chemical conversion coating (D12) to surface of housing assembly in accordance with TM 55-1500-345-23.

NOTE

Polyamide epoxy primer should be omitted from areas A, B, and C of housing assembly.

50. Apply one coat of polyamide epoxy primer (D13) to surface of housing assembly in accordance with TM 55-1500-345-23.



HOUSING — FREE WHEELING UNIT

406040-135A

INSPECT

CLEAN CONE SET

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

51. Clean cone set with a wiping rag (D53) dampened with drycleaning solvent (D1).

52. Dry cone set with a clean wiping rag (D53).

INSPECT CONE SET

53. Magnetic particle inspect cone set in accordance with TM 43-0103.

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

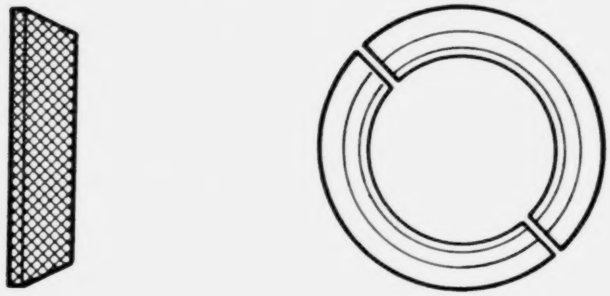
54. Inspect cone set to damage limits shown. Reject cone set if limits are exceeded.

REPAIR CONE SET

55. Repair damage to cone set using sandpaper (D11).

56. Blend repaired area into surrounding area with crocus cloth (D8).

INSPECT



CONE SET

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL DAMAGE		
WEAR	None permitted	None permitted
SCORING	None permitted	0.010 In.
CORROSION	None permitted	None permitted

406040-164A

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

CLEAN CONE SET SPACER

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

57. Clean cone set spacer with a wiping rag (D53) dampened with drycleaning solvent (D1).

58. Dry cone set spacer with a clean wiping rag (D53).

INSPECT CONE SET SPACER

59. Magnetic particle inspect cone set spacer in accordance with TM 43-0103.

60. Inspect cone set spacer to damage limits shown. Reject spacer if limits are exceeded.

REPAIR CONE SET SPACER

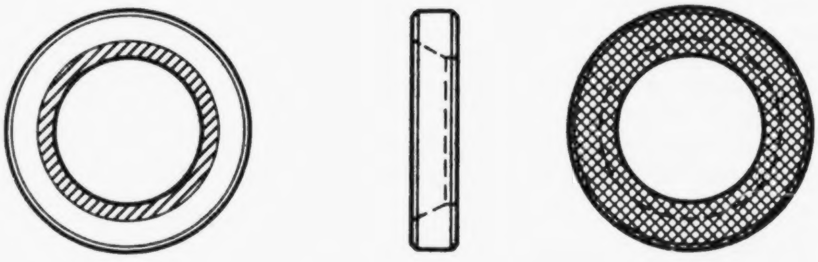
61. Repair damage to cone set spacer using sandpaper (D11).

62. Blend repaired area into surrounding area with crocus cloth (D8).

INSPECT

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



CONE SET SPACER

	DAMAGE LOCATION SYMBOLS		
	▩	▨	☐
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL DAMAGE			
WEAR	None permitted	None permitted	N/A
SCORING	None permitted	None permitted	0.010 In.
CORROSION	None permitted	None permitted	None permitted

406040-165A

GO TO NEXT PAGE

CLEAN AFT BEARING AND SEAL CAP

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

63. Clean aft bearing and seal cap with wiping rag (D53) dampened with drycleaning solvent (D1).

64. Dry aft bearing and seal cap with a clean wiping rag (D53).

65. Inspect aft seal for leakage. Maximum allowable leakage is 2 drops per hour or 3 drops per minute from all sources.

INSPECT AFT BEARING AND SEAL CAP

66. Fluorescent penetrant inspect aft bearing and seal cap in accordance with TM 43-0103.

67. Inspect aft bearing and seal cap for wear in accordance with Table 6-5-1.

68. Inspect aft bearing and seal cap to limits shown. Reject cap if limits are exceeded.

REPAIR AFT BEARING AND SEAL CAP

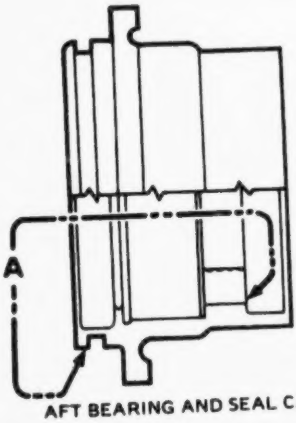
69. Repair damage to aft bearing and seal cap using sandpaper (D11).

70. Blend repaired area into surrounding area with crocus cloth (D8).

NOTE

Brush cadmium plating should be omitted from area A of aft bearing and seal cap.

71. Apply brush cadmium plating (D106) to repaired area.



AFT BEARING AND SEAL CAP

406040-136A

INSPECT

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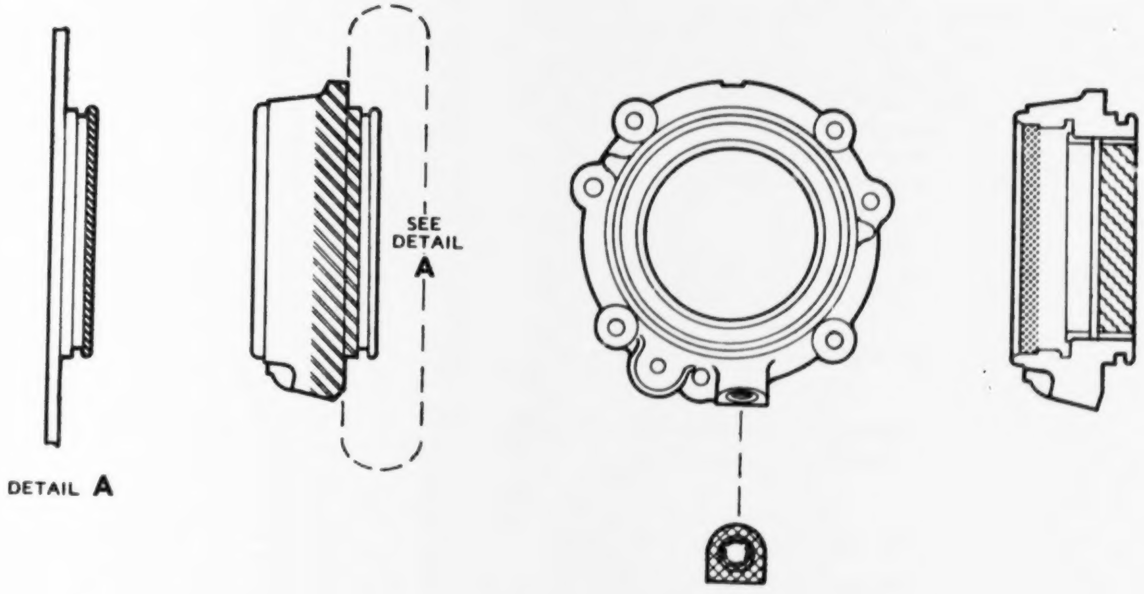
6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



AFT BEARING AND SEAL CAP

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	▧	░	▨	▩	▦	□
MECHANICAL DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH					
WEAR	2.046-2.047 In. diameter	N/A	N/A	2.500-2.501 In. diameter	N/A	N/A
SCORING	0.0002 In.	N/A	0.003 in.	N/A	N/A	N/A
CORROSION	None permitted	None permitted	None permitted	None permitted	None permitted	N/A

406040-166A

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)

CLEAN OUTPUT ADAPTER WEAR SLEEVE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

72. Clean output adapter wear sleeve with a wiping rag (D53) dampened with drycleaning solvent (D1).

73. Dry output adapter wear sleeve with a clean wiping rag (D53).

INSPECT OUTPUT ADAPTER WEAR SLEEVE

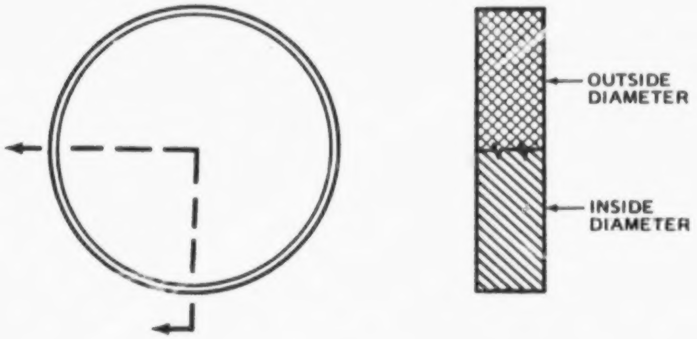
74. Inspect output adapter wear sleeve to limits shown. Reject sleeve if limits are exceeded.

REPAIR OUTPUT ADAPTER WEAR SLEEVE

75. Repair damage to output adapter wear sleeve, using crocus cloth (D8) and blend into surrounding area.

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



WEARSLEEVE - ADAPTER

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS		
	▩	▨	▭
	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL DAMAGE			
WEAR	0.002 In. [1]	N/A	N/A
SCORING	None permitted	None permitted	N/A
CORROSION	None permitted	None permitted	N/A

NOTE:

[1] Maximum allowable wear in lip seal path on diameter (0.001 inch per surface) is determined by difference between worn area and unworn area.

406040-167B

GO TO NEXT PAGE

CLEAN OUTPUT ADAPTER

WARNING

> Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

76. Clean output adapter with a wiping rag (D53) dampened with drycleaning solvent (D1).

77. Dry output adapter with a clean wiping rag (D53).

INSPECT OUTPUT ADAPTER

78. Inspect output adapter for wear in accordance with Table 6-5-1.

79. Magnetic particle inspect output adapter in accordance with TM 43-0103.

80. Inspect output adapter to limits shown. Reject adapter if limits area exceeded.

REPAIR OUTPUT ADAPTER

81. Repair damage to output adapter using sandpaper (D11).

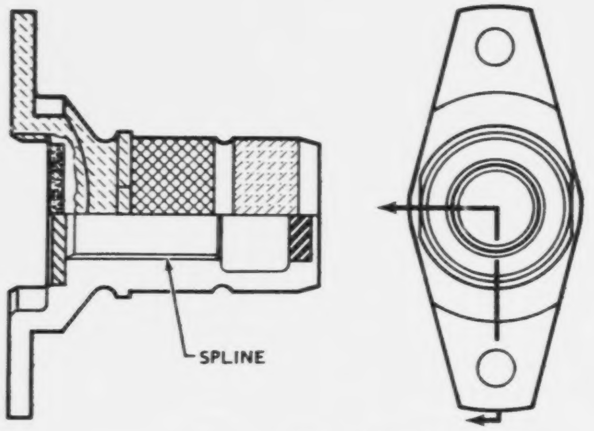
82. Blend repaired area into surrounding area with crocus cloth (D8).

83. Repair duplex bearing nut per limits as shown.

INSPECT

GO TO NEXT PAGE

6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



AFT OUTPUT ADAPTER

TYPE OF DAMAGE	▦	▨	▧	▩	▒	▤	☐	HOLE ○
MECHANICAL WEAR	N/A	N/A	N/A	0.750-0.750 In. diameter	1.500-1.150 In. diameter	1.239-1.240 In. diameter	N/A	0.313-0.315 In. diameter
SCORING	None permitted	0.002 In.	None permitted	None permitted	None permitted	None permitted	N/A	N/A
CORROSION	None permitted	None permitted	None permitted	None permitted	None permitted	None permitted	N/A	None permitted

DAMAGE LOCATION SYMBOLS — MAXIMUM DAMAGE AND REPAIR DEPTH

SPLINE DAMAGE

WEAR 0.6117-0.6198 inch diameter measured between 0.054 inch diameter pins

CORROSION None permitted

406040-162-B

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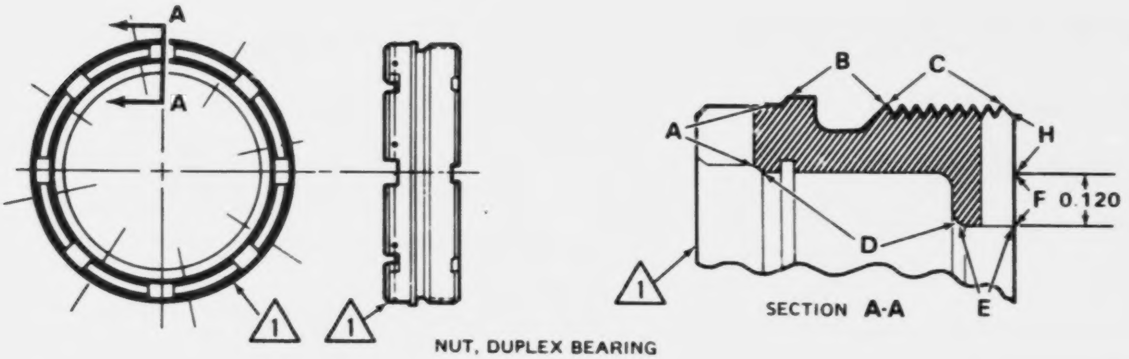
6-5-3. CLEAN, INSPECT, AND REPAIR COMPONENTS OF FREEWHEELING UNIT (AVIM) (CONT)



NUT, DUPLEX BEARING

AREA	MECH OR CORROSION DAMAGE DEPTH BEFORE AND AFTER REPAIR	MAXIMUM AREA PER FULL DEPTH REPAIR	NUMBER OF REPAIRS	EDGE CHAMFER
A	0.060	0.25 SQ. IN.	8	0.060 x 45°
B	ONLY WHAT CAN BE REMOVED WITH ABRASIVE PADS (D89) OR STEEL WOOL (D57)	100%	N/A	0.030 x 45°
C	SEE NOTES △2 △3 △4			
D	ONLY WHAT CAN BE REMOVED WITH SCOTCHBRITE/STL. WOOL	100%	N/A	NONE
E	0.005 0.002	0.01 SQ. IN. 100%	3 N/A	NONE
F	0.060	0.25 SQ. IN.	4	NONE

NOTES:

△1 Inspection data applies to 406-040-543-101/-103 nuts

△2 No cracks permitted

△3 Touch up coating in repaired areas with brush application of chemical conversion coating (D 12) (task 2-1-38).

△4 Area C - maximum thread damage is as follows:
-total length of damaged thread shall not exceed one full wrap (12 inches).

406040-306A

END OF TASK

6-5-4. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR DRIVE OUTPUT OIL SEAL (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Nonmetallic Drift
Arbor Press
Torque Wrench, 30–150 Inch-Pounds
Plastic Scraper (Work Aid)
Mallet, Plastic

Parts:

Packing

Materials:

Methyl-Ethyl-Ketone (D6)
Sealant (D29)
Crocus Cloth (D8)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

General Safety Instructions:

WARNING

Methyl-ethyl-ketone (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and opne flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

6-5-4. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR DRIVE OUTPUT OIL SEAL (AVIM) (CONT)

REMOVE

NOTE

It may be necessary to remove elbow fitting from aft bearing and seal cap to prevent damage to elbow fitting.

1. Loosen jamnut (1) and remove elbow fitting (2) with packing (3) from aft bearing and seal cap (4) Discard packing (3).

2. Using plastic scraper, remove sealant from mating surface of aft bearing and seal cap (4) and seal (5).

CAUTION

Use care when removing seal to prevent damage to output shaft support bearing.

3. Remove seal (5) from aft bearing and seal cap (4) using nonmetallic drift and tapping it with a plastic mallet.

CLEAN

4. Clean seal mating surface with methyl-ethyl-keytone (D6).

5. Inspect output shaft support bearing (6) for any damage.

6. Inspect seal mating surface for burrs and scratches.

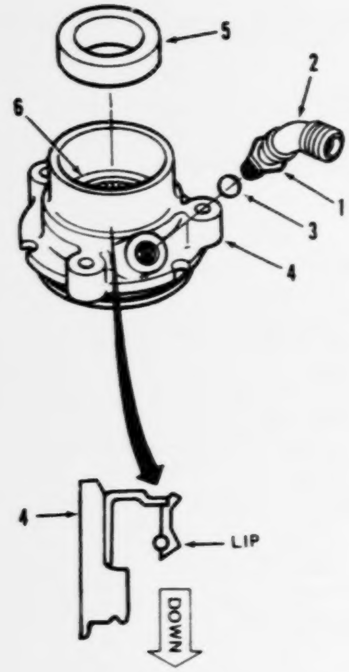
REPAIR

7. Remove burrs and scratches with crocus cloth (D8).

8. If bearing (6) is damaged, replace bearing (6) (Task 6-5-5).

INSTALL

9. Clean exterior of seal (5) with methyl-ethyl-keytone (D6).



406040-137

10. Apply thin film of sealant (D29) to exterior surface of seal (5).

11. Press seal (5) into aft bearing and seal cap (4) with seal lip facing down.

12. Install packing (3) on elbow fitting (2) and install elbow fitting (2) on aft bearing and seal cap (4). Torque jamnut (1) **30-45 INCH-POUNDS**.

INSPECT

13. Cover aft bearing and seal cap (4) with a clean wiping rag (D53) to prevent contamination, if aft bearing and seal cap (4) is not being installed at this time.

END OF TASK

6-5-5. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR OUTPUT SHAFT SUPPORT BEARING (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Arbor Press
Puller Kit
Mechanical Vise
Torque Wrench, 30-150 Inch-Pounds

Parts:

Packing

Materials:

Drycleaning Solvent (D1)
Wiping Rag (D53)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-5-5. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR OUTPUT SHAFT SUPPORT BEARING (AVIM) (CONT)

REMOVE SUPPORT BEARING

NOTE

It may be necessary at this time to remove the elbow fitting from aft bearing and seal cap, to prevent damage to elbow fitting.

1. Loosen jamnut (1) and remove elbow fitting (2) with packing (3) from aft bearing and seal cap (4). Discard packing (3).

2. Place aft bearing and seal cap (4) in a vise.

3. Remove retainer ring (5) from aft bearing and seal cap (4).

4. Using bearing puller, remove support bearing (6) from aft bearing and seal cap (4).

CLEAN

WARNING

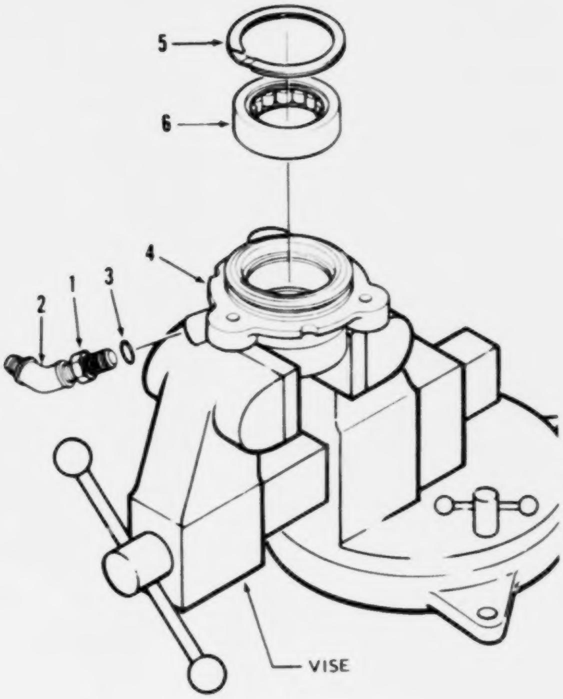
Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

5. Clean bearing mating surface with a wiping rag (D53) dampened with drycleaning solvent (D1).

6. Inspect support bearing mating surface of aft bearing and seal cap (4) for burrs, nicks, and scratches.

REPAIR

7. Repair aft bearing and seal cap using crocus cloth (D8) and blending repair into surrounding area.



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INSTALL SUPPORT BEARING

8. Press support bearing (6) into aft bearing and seal cap (4) and secure with retaining ring (5).

9. Remove aft bearing and seal cap (4) from vise.

10. Install packing (3) on elbow fitting (2) on aft bearing and seal cap (4). Torque jamnut (1) **30-45 INCH-POUNDS**.

INSPECT

END OF TASK

6-5-6. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR DRIVE OUTPUT ADAPTER WEAR SLEEVE (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Arbor Press
Rotary Tool Kit
Chisel
Heat Gun (B240)
Installation Tool, Wear Sleeve (B139)
Vise
Plastic Mallet (Work Aid)

Materials:

Drycleaning Solvent (D1)
Wiping Rag (D53)
Crocus Cloth (D8)
Rubber Gloves (D119)

Personnel Required:

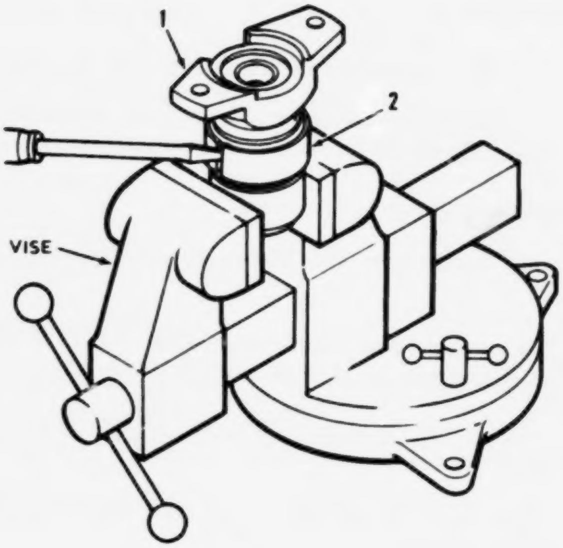
66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-5-6. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR DRIVE OUTPUT ADAPTER WEAR SLEEVE (AVIM) (CONT)

REMOVE OUTPUT ADAPTER WEAR SLEEVE

1. Place output adapter (1) in vise and ensure that output adapter surface finish is protected from damage by the jaws of vise.



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CAUTION

Use care when cutting groove in wear sleeve, or rotary tool will damage output adapter.

2. Using rotary tool, cut a groove in wear sleeve (2) stopping just before cutting through wear sleeve (2).

3. Using a blunt chisel and a plastic mallet, strike groove in wear sleeve (2) to separate.

4. Remove wear sleeve (2) from output adapter (1). Discard wear sleeve (2).

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

5. Clean output adapter (1) with wiping rag (D53) dampened with drycleaning solvent (D1).

GO TO NEXT PAGE

6-5-6. REMOVE/INSTALL FREEWHEELING UNIT TAIL ROTOR DRIVE OUTPUT ADAPTER WEAR SLEEVE (AVIM) (CONT)

6. Inspect wear sleeve area for nicks, scratches, and burrs.

REPAIR

7. Remove nicks, scratches, and burrs with crocus cloth (D8) and blend repairs into surrounding area.

INSTALL

8. Install new wear sleeve (2) on output adapter (1).

9. Install wear sleeve installation tool (3) (B139) on output adapter (1) and mate with wear sleeve (2).

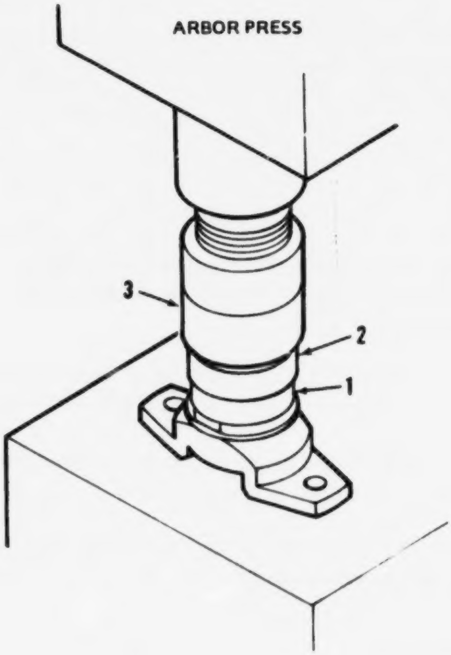
10. Using heat gun, heat wear sleeve (2) until it can be easily pressed on output adapter (1).

11. Using arbor press, press wear sleeve (2) onto output adapter (1).

INSPECT

12. Remove output adapter (1) with wear sleeve installation tool (3) from arbor press.

13. Remove wear sleeve installation tool (3) from output adapter (1).



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END OF TASK

6-5-7. INSTALL FREEWHEELING UNIT

This task covers: Installation of Freewheeling Unit (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Spanner Set, Input Adapter (B127)
Spanner Assembly, Input Adapter (B134)
Wrench Assembly, External Spline (B124)
Maintenance Platform
Torque Wrench, 100-500 Foot-Pounds
Torque Wrench, 100-750 Inch-Pounds
Torque Wrench, 30-150 Inch-Pounds

Parts:

Packings (15)
Nut, Steel Self-Locking
Cotter Pin

Materials:

Lockwire (D4)
Grease (D15)
Lubricant (D2 or D3)
Sealing Compound (D20)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer
Pilot

References:

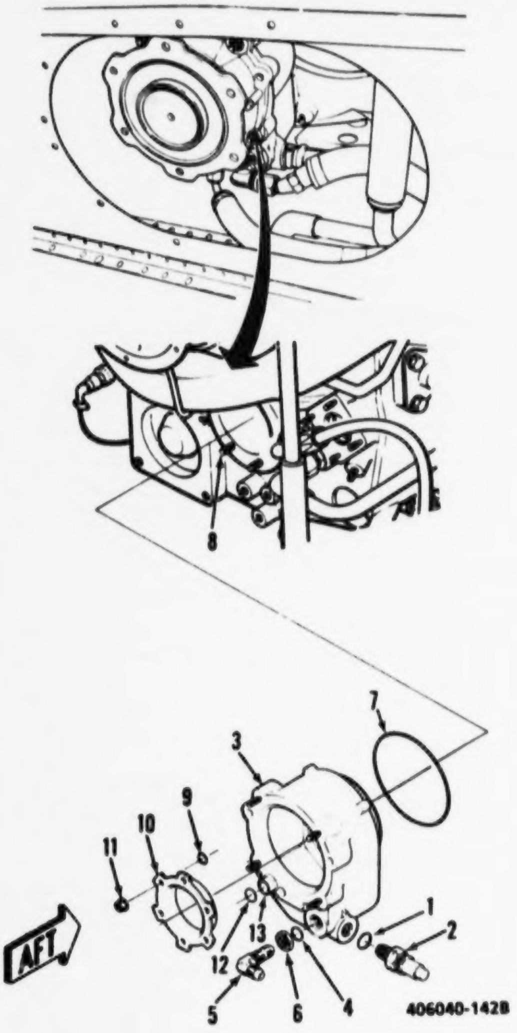
TM 43-0103
TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)
Air Induction Cowling Removed (Task 4-2-1)
Engine to Transmission Driveshaft Removed (Task 6-2-2)
Forward Tail Rotor Shaft Assembly Removed (Task 6-6-1)

GO TO NEXT PAGE

6-5-7. INSTALL FREEWHEELING UNIT (CONT)



1. Install packing (1) on chip detector housing (2) and install in housing assembly (3). Torque chip detector housing **75-100 INCH-POUNDS**.

2. Secure chip detector housing (2) to housing assembly (3) with lockwire (D4). Install chip detector.

3. Install packing (4) on elbow fitting (5) and install elbow fitting (5) in housing assembly (3). Torque jamnut (6) **75-125 INCH-POUNDS.**

4. Install packing (7) on housing assembly (3) and install housing assembly (3) on six studs (8).

5. Install six packings (9) on six mounting studs (8).

6. Install pilot ring (10) in housing assembly (3) and on six mounting studs (8).

7. Install six nuts (11) on six mounting studs (8) inside housing assembly (3). Torque nuts (11) **50-70 INCH-POUNDS**.

8. Install packing (12) on housing assembly oil transfer tube (13). Lubricate packing (12) with lubricant (D2 or D3).

GO TO NEXT PAGE

6-5-7. INSTALL FREEWHEELING UNIT (CONT)

9. Lubricate packings (14 and 16) with lubricant (D2 or D3).

10. Install packing (14) in groove of forward seal cap (15) and packing (16) in groove on aft end of output shaft (17).

11. Install freewheeling unit output shaft (17) into housing assembly (3) and on four mounting studs (18).

12. Install four aluminum washers (19) on four mounting studs (18) and against forward seal cap (15).

13. Install four steel washers (20) and four nuts (21) on four mounting studs (18). Torque nuts (21) **50-70 INCH-POUNDS**.

CAUTION

Shaft assemblies with 406-040-500-103 part number shall use 406-040-542-101 main driveshaft adapter. Shaft assemblies with 406-040-500-111 part number shall use 406-040-542-103 main driveshaft adapter. Main driveshaft adapters stated above shall not be intermixed from one shaft assembly to another.

14. Install main driveshaft adapter (22) on splines (23) of output shaft (17).

15. Install output adapter bolt (24) on threads (25) of output shaft (17).

16. Install input adapter spanner set (B127) on main driveshaft adapter (22) and secure in place.

17. While holding main driveshaft adapter (22) with input adapter spanner set (B127), torque output adapter bolt (24) **150-175 FOOT-POUNDS** with external spline wrench.

18. Install packing (26) on output shaft plug assembly (27).

19. Align pin (28) on output shaft plug assembly (27) with an aligned hole in output adapter bolt (24).

20. Install output shaft plug assembly (27) in output adapter bolt (24) and secure with retainer ring (29).

21. Connect inlet oil line (30) to forward seal cap fitting (31).

22. Connect return oil line (32) to elbow fitting (5).

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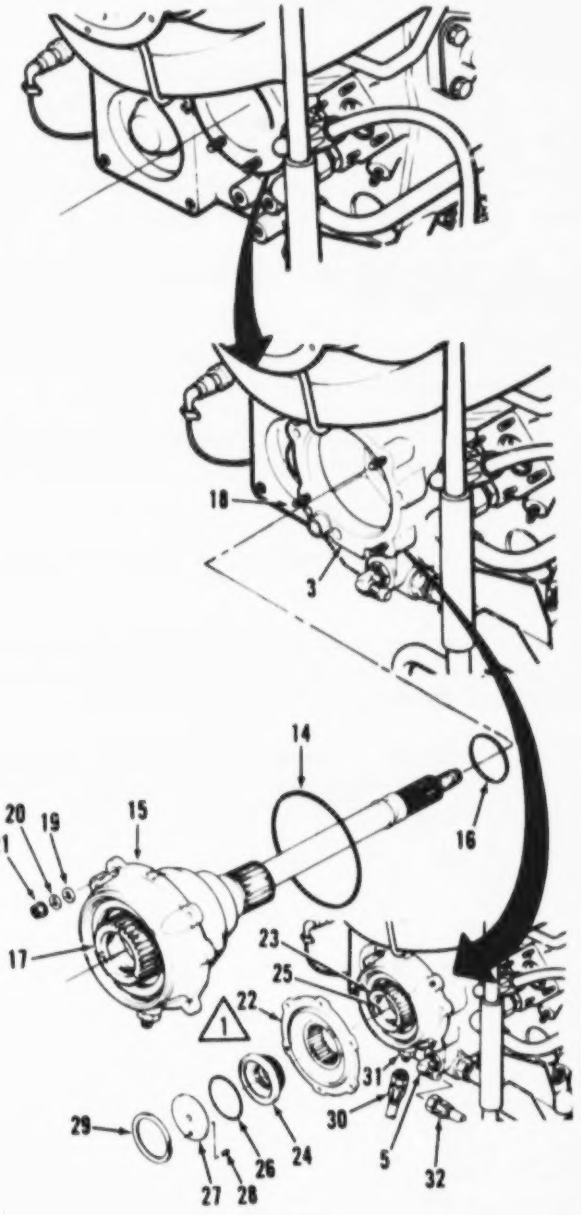

NOTE

⚠1 Shaft assembly 406-040-500-103 uses main driveshaft adapter 406-040-542-101. Shaft assembly 406-040-500-111 uses main driveshaft adapter 406-040-542-103.

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6-5-7. INSTALL FREEWHEELING UNIT (CONT)

CAUTION

> Ensure that both halves of cone set are properly seated in groove of the tail rotor drive output shaft and that the spacer is fully seated on the cone set. Damage to accessory drive gears and output shaft could result if cone set becomes unseated.

23. Install cone set (33) in groove (34) on aft end of output shaft (17).

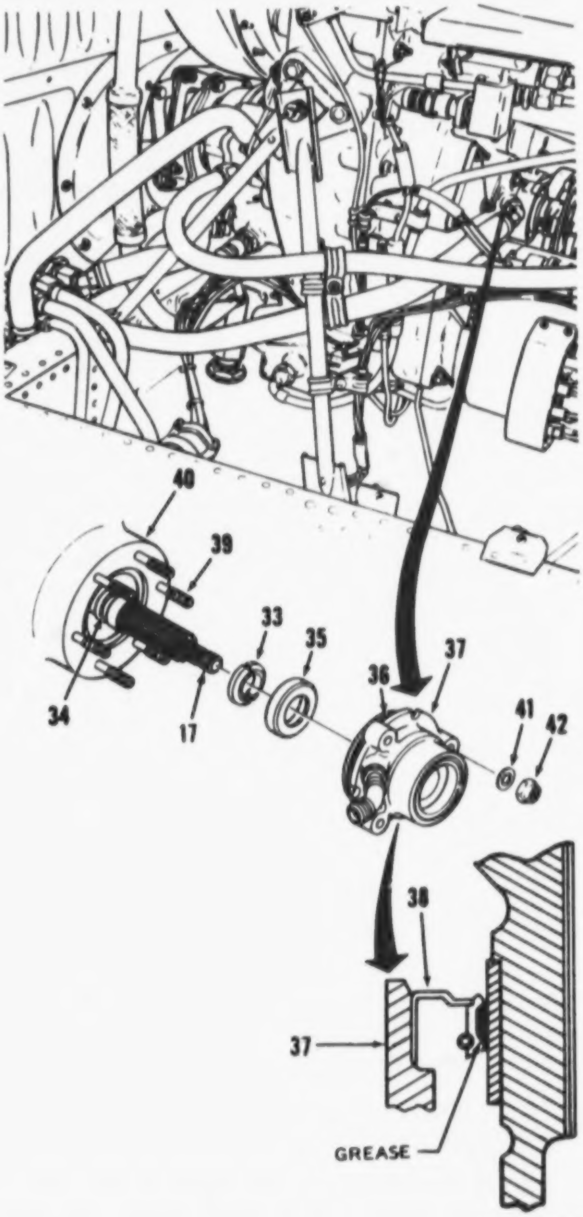
24. Install spacer (35) on output shaft (17) and mate with cone set (33).

25. Install packing (36) on aft bearing and seal cap (37) and lubricate packing (36) with lubricant (D2 or D3).

26. Fill area between lips of seal (38) with grease (D15).

27. Install aft bearing and seal cap (37) on three support studs (39). Use hand pressure to seat aft bearing and seal cap in output support (40).

28. Install three washers (41) and three nuts (42) on three support studs (39). Torque nuts (42) **50-70 INCH-POUNDS**.



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6-5-7. INSTALL FREEWHEELING UNIT (CONT)

29. Connect oil line (43) to elbow fitting (44).

CAUTION

Do not remove output adapter once it has been installed. Movement (in and out) of output adapter may cause cone set to be unseated. Damage to accessory drive gears and output shaft may result.

NOTE

If output adapter is moved outboard or removed, check cone set for seated condition. Check of cone set may require removal of aft bearing and seal cap.

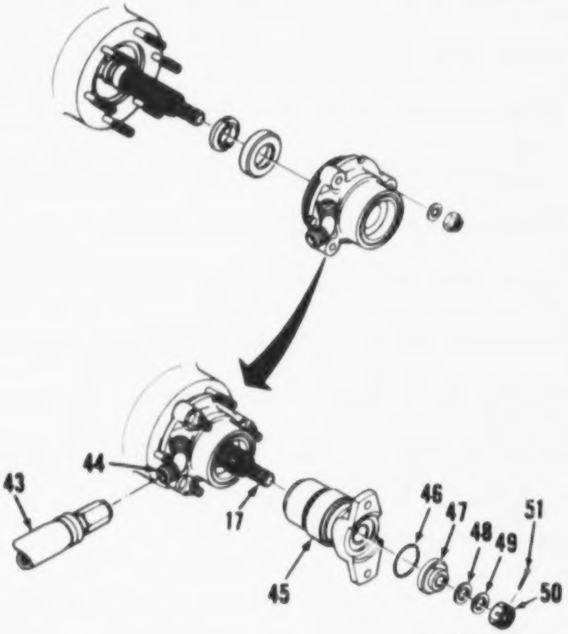
30. Install output adapter (45) on aft end of output shaft (17).

31. Install packing (46) on washer (47) and install washer (47) with packing (46) on output shaft (17). Apply sealing compound (D20) to mating edges of adapter (45) and washer (47).

32. Install washer (48), washer (49), and nut (50).

33. Install spanner assembly on output adapter (45).

34. Torque nut (50) **225-500 INCH-POUNDS** and install cotter pin (51).



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INSPECT

FOLLOW-ON MAINTENANCE

Install forward tail rotor shaft assembly (Task 6-6-1).

Install engine to transmission driveshaft (Task 6-2-2).

Install air induction cowling (Task 4-2-4).

Service transmission (Task 1-4-6).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

Section VI. TAIL ROTOR DRIVESHAFTS

This section covers maintenance procedures for the tail rotor driveshafts. These procedures include removal, cleaning, inspection, repair, balance, installation, and replacement.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Forward Shaft Assembly	6-6-1	6-219
Clean, Inspect, and Repair Forward Shaft Assembly	6-6-2	6-221
Remove/Install Aft Shaft Assembly	6-6-3	6-223
Clean, Inspect, and Repair Aft Shaft Assembly	6-6-4	6-226
Remove/Install Coupling Disc Pack (Typical)	6-6-5	6-229
Inspect Disc Pack Assemblies	6-6-6	6-231
Remove/Install Shaft and Bearing Hanger Assembly	6-6-7	6-233
Remove/Install Adapter, Bearing Hanger, and Segmented Shaft (Typical)	6-6-8	6-236
Clean, Inspect, and Repair Components of Shaft and Bearing Hanger Assembly	6-6-9	6-238
Remove Fan Shaft Assembly	6-6-10	6-248
Remove/Install Bearing Hangers, Bearing, Impeller, Fan Shaft, and Blower Housing	6-6-11	6-251
Clean, Inspect, and Repair Bearing Hangers, Bearing, Impeller, Fan Shaft, and Blower Housing	6-6-12	6-257
Install Fan Shaft Assembly	6-6-13	6-265
Remove/Install Fan Shaft Bearing Hanger Brackets (Forward and Aft)	6-6-14	6-268
Clean, Inspect, and Repair Fan Shaft Bearing Hanger Brackets (Forward and Aft)	6-6-15	6-271
Tail Rotor Driveshaft and Bearing Hanger Alignment and Coupling Inspection	6-6-16	6-274

6-6-1. REMOVE/INSTALL FORWARD SHAFT ASSEMBLY

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 100–750 Inch-Pounds

Parts:

Nut, Steel, Self-Locking

Personnel Required:

66S Scout Helicopter Technical Inspection
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

1. Gain access to forward shaft assembly (1) through left engine cowling side panel.

REMOVE

2. Disconnect forward end of forward coupling disc pack (2) from output adapter (3) by removing two nuts (4), two bolts (5), two flat washers (6), and six chamfered washers (7).

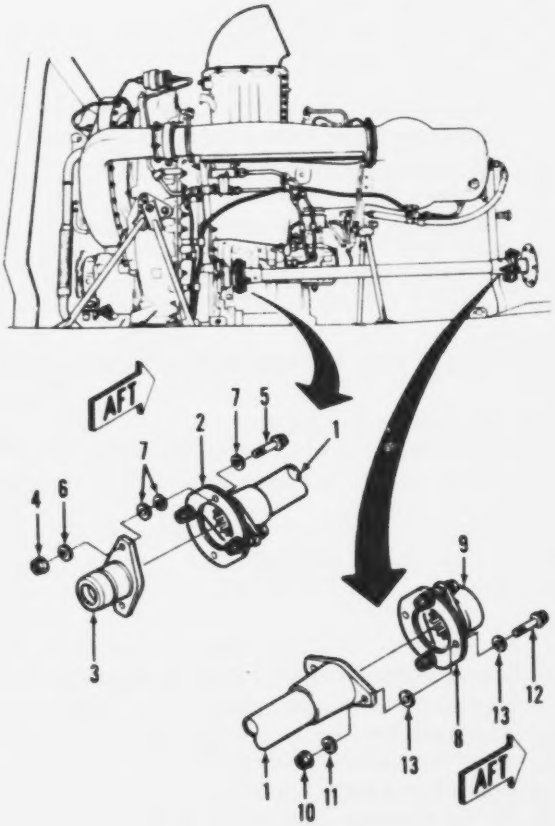
CAUTION

Forward end of forward shaft assembly shall be supported to prevent damage to coupling disc pack on fan and shaft adapter.

3. Disconnect aft end of forward shaft assembly (1) from coupling disc pack (8) on fan and shaft adapter (9) by removing two nuts (10), two flat washers (11), two bolts (12), and four chamfered washers (13).

4. Remove forward shaft assembly (1).

5. Clean, inspect, and repair forward shaft assembly (Task 6-6-2).



406040-190A

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6-6-1. REMOVE/INSTALL FORWARD SHAFT ASSEMBLY (CONT)

INSTALL

CAUTION

Forward end of forward shaft assembly should be supported to prevent damage to coupling disc pack on fan and shaft adapter.

Chamfered side of washers (7 and 13) must be installed against coupling disc pack. If washers are installed incorrectly, damage to coupling disc pack will result.

6. Connect aft end of forward shaft assembly (1) to coupling disc pack (8) on fan and shaft adapter (9) by installing two bolts (12), with four chamfered washers (13), two flat washers (11), and two nuts (10).

CAUTION

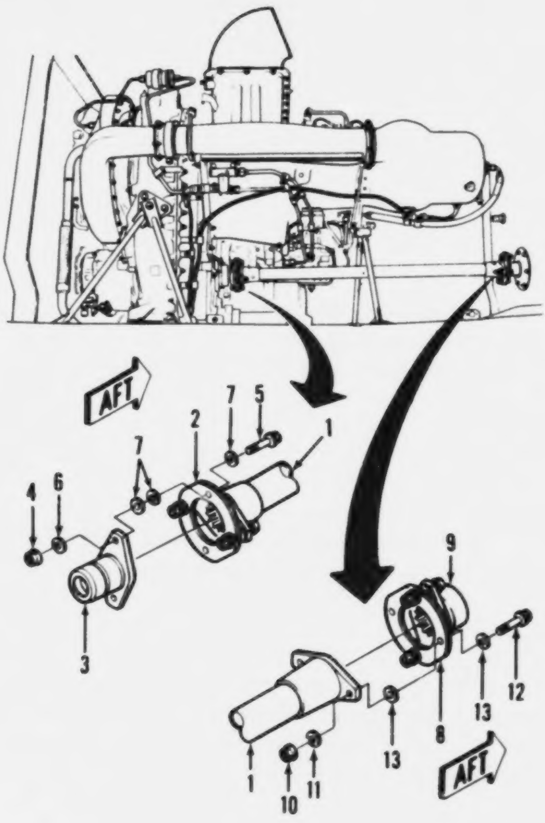
Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nuts by attempting to insert a matching bolt by hand. Torque shall be applied only to nut, with bolt held stationary. Turning bolt during torquing may cause gaps in disc pack.

7. Torque nuts (10) **150-180 INCH-POUNDS**.

8. Connect forward end of forward coupling disc pack (2) to output adapter (3) by installing with six chamfered washers (7), two bolts (5), two flat washers (6), and two nuts (4).

CAUTION

Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nut by attempting to insert a matching bolt by hand. Torque shall be applied only to nut, with bolt held stationary. Turning bolt during torquing may cause gaps in disc pack.



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9. Torque nuts (4) **150-180 INCH-POUNDS**.

10. Inspect for gaps between discs in both packs. Gaps in excess of 0.015 inch are unacceptable. If gaps are larger than 0.015 inch, loosen bolts, rotate disc pack back and forth, and uniformly torque bolts.

11. Align tail rotor driveshaft and hanger bearings (Task 6-6-16).

INSPECT

12. Close left engine cowling side panel.

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-6-2. CLEAN, INSPECT, AND REPAIR FORWARD SHAFT ASSEMBLY

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Depth Gage, Dial Indicating
Outside Micrometer Set, 0–6 Inches
Telescoping Gage Set, 5/16–6 Inches

Materials:

Aliphatic Naphtha (D7)
Wiping Rags (D53)
Gloves, Rubber (D119)
Methyl-Ethyl-Ketone (D6)
Corrosion Protective Coating (D133)
Sandpaper (D11)
Crocus Cloth (D8)
Brush-on Cadmium Plate (D106)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0103

CLEAN

WARNING

Aliphatic naphtha (D7), methyl-ethyl-ketone (D6) and corrosion protective coating (D133) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean forward shaft assembly with a wiping rag (D53) dampened with aliphatic naphtha (D7).

2. Dry forward driveshaft assembly with a clean wiping rag (D53).

3. Remove corrosion protective coating with a wiping rag (D53) dampened with methyl-ethyl-ketone (D6).

INSPECT

4. Inspect rivets for security and presence.

5. Magnetic particle inspect forward shaft assembly in accordance with TM 43-0103.

6. Inspect forward shaft assembly to limits shown.

REPAIR

7. Repair damage to forward shaft assembly using sandpaper (D11).

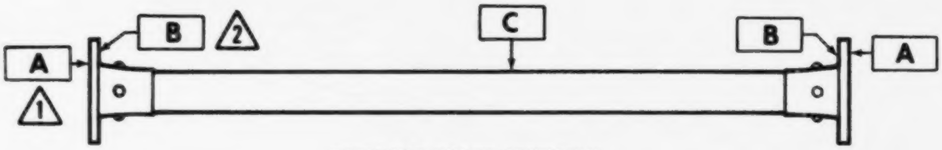
8. Blend repaired area into surrounding area with crocus cloth (D8). Apply brush cadmium plate (D106) to reworked areas prior to clear lacquer protective coating.

9. Apply two coats of corrosion protective coating (D133). Allow 30 minutes drying time between first and second coats. Allow to cure at ambient room temperature for 48 hours. Do not apply corrosion protective coating (D133) to end faces of adapters.

INSPECT

GO TO NEXT PAGE

6-6-2. CLEAN, INSPECT, AND REPAIR FORWARD SHAFT ASSEMBLY (CONT)



FORWARD SHAFT ASSEMBLY

DAMAGE LOCATION SYMBOLS

A B C

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	Mechanical damage up to 0.002 inch deep around entire circumference shall be polished out, provided that stock removal does not exceed 0.003 inch. Mechanical damage up to 0.005 inch deep, axial or circumferential but not longer than 25 percent of circumference, shall be polished out, provided that stock removal does not exceed 0.006 inch.
CORROSION	When corrosion damage is removed from diameter C surfaces A and B, caution must be used to ensure that runout of surfaces per notes △1 and △2 is not exceeded. Corrosion damage shall be polished out, provided that stock removal does not exceed 0.006 inch.
EDGE CHAMFER	Edge damage shall be removed from surfaces A and B by using a chamfer of 0.030 inch by 40 to 50 degrees, whose total length when polished to existing surface shall not exceed 0.50 inch, provided that no more than two such repairs are located in the same quadrant of the flange adapter.

NOTES: △1 Surfaces A must be square with centerline of driveshaft within 0.004 inch T.I.R.

△2 Surfaces B must be parallel with surfaces A within 0.006 inch.

△3 No cracks are permitted

406040-253A

END OF TASK

6-6-3. REMOVE/INSTALL AFT SHAFT ASSEMBLY

This task covers: Removal and Installation

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench, 100-750 Inch-Pounds
Maintenance Platform

Parts:

Nut, Steel, Self-Locking

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)

GO TO NEXT PAGE

6-6-3. REMOVE/INSTALL AFT SHAFT ASSEMBLY (CONT)

1. Gain access to aft shaft assembly by opening tail rotor driveshaft cover.

REMOVE

2. Remove two nuts (1) with two flat washers (2) from two bolts (3).

NOTE

Break torque on remaining two nuts.

3. Remove two bolts (3) with four chamfered washers (4) from disc pack (5) and shaft adapter (6).

4. Remove two nuts (7) with two flat washers (8) from two bolts (9).

5. Remove two bolts (9) with two chamfered washers (10) from shaft (6) and disc pack (12).

6. Remove shaft (6) and two chamfered washers (11).

INSTALL

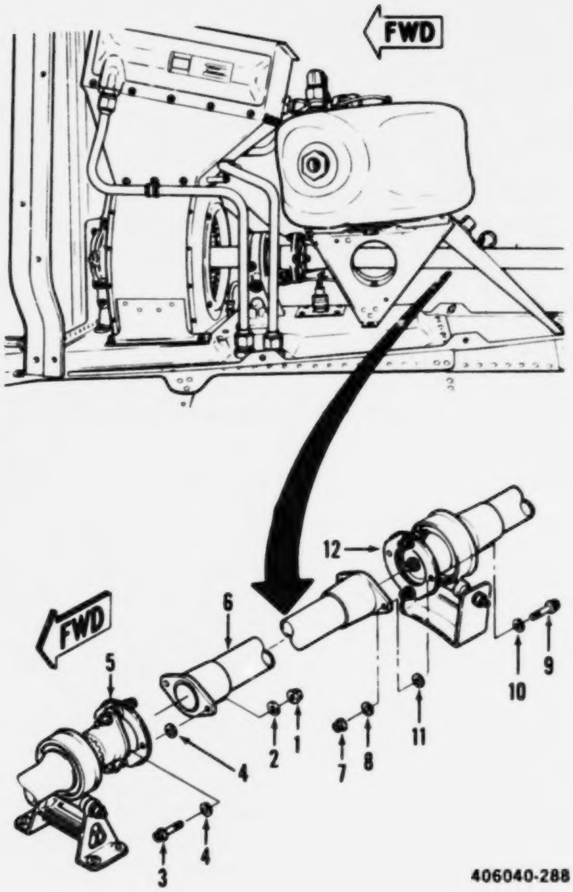
CAUTION

All chamfered washers shall be installed with rounded edges facing disc pack. Failure to do so will result in damage to the disc pack.

7. Push two bolts (9) with two chamfered washers (10) through disc pack (13) and install two chamfered washers (11) on two bolts (9).

8. Between disc packs (5 and 12) position shaft (6).

9. Push two bolts (9) through shaft (6) and install two flat washers (8) with two nuts (7).



406040-288

GO TO NEXT PAGE

6-6-3. REMOVE/INSTALL AFT SHAFT ASSEMBLY (CONT)

CAUTION

Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nuts by attempting to insert a matching bolt by hand. Torque shall be applied only to nut, with bolt head stationary. Turning bolt during torquing may cause gaps in disc pack.

10. Torque nuts (9) **150-180 INCH-POUNDS**.

NOTE

Opposite end of shaft shall be supported.

11. Install two bolts (3) (with one chamfered washer (4) under each bolt head) through disc pack (6).

12. Install two chamfered washers (5) on two bolts (3). Slide adapter (14) and disc pack (6) aft. Guide bolts (3) into holes in shaft adapter (7).

CAUTION

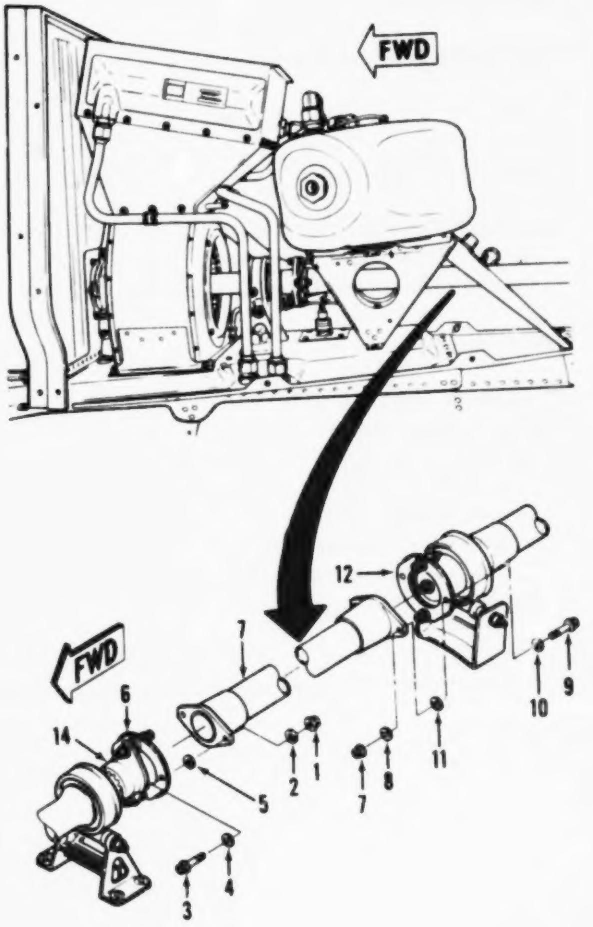
Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nuts by attempting to insert a matching bolt by hand. Torque shall be applied only to nut, with bolt held stationary. Turning bolt during torquing may cause gaps in disc pack.

13. Install two flat washers (2) with two nuts (1).

14. Torque nuts (1) **150-180 INCH-POUNDS**.

15. Inspect for gaps between discs in both packs. Gaps in excess of 0.015 inch are unacceptable. If gaps are larger than 0.015 inch, loosen bolts, rotate disc pack back and forth, and uniformly torque bolts.

16. Align tail rotor driveshaft and hanger bearings (Task 6-6-16).



406040-192A

INSPECT

FOLLOW-ON MAINTENANCE

Aft fairing assembly installed (Task 2-1-28).

Close tail rotor driveshaft cover.

Pilot perform MOC (TM 55-1520-248-MTF)

END OF TASK

6-6-4. CLEAN, INSPECT, AND REPAIR AFT SHAFT ASSEMBLY

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Depth Gage, Dial Indicating
Outside Micrometer Set, 0-6 Inches

Materials:

Aliphatic Naphtha (D7)
Wiping Rags (D53)
Sandpaper (D11)
Crocus Cloth (D8)
Gloves, Rubber (D119)
Methyl-Ethyl-Ketone (D6)
Corrosion Preventive Coating (D133)
Chemical Conversion Coating (D12)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0103

General Safety Instructions:

WARNING

Aliphatic naphtha (D7), methyl-ethyl-ketone (D6) and corrosion protective coating (D133) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from and open flame. Wear gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

6-6-4. CLEAN, INSPECT, AND REPAIR AFT SHAFT ASSEMBLY (CONT)

CLEAN

1. Clean aft shaft assembly with a wiping rag (D53) dampened with aliphatic naphtha (D7).

2. Dry aft shaft assembly with a clean wiping rag (D53).

3. Remove corrosion protective coating from aft shaft assembly with a wiping rag (D53) dampened with methyl-ethyl-ketone (D6).

INSPECT

4. Inspect end fittings for proper bonding and security.

5. Fluorescent penetrant inspect aft shaft assembly in accordance with TM 43-0103.

6. Inspect aft shaft assembly to limits shown.

REPAIR

7. Repair damage to aft shaft assembly using sandpaper (D11).

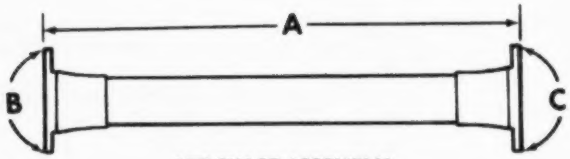
8. Blend repaired area into surrounding area with crocus cloth (D8).

9. Brush chemical conversion coating (D12) on repaired areas.

NOTE

> Corrosion protective coating (D133) should be omitted from areas B and C of aft shaft assembly.

10. Apply two coats of corrosion preventive coating (D133) to area A of aft shaft assembly. Allow 30 minutes drying time between first and second coats. Allow to cure at ambient room temperature for 48 hours.



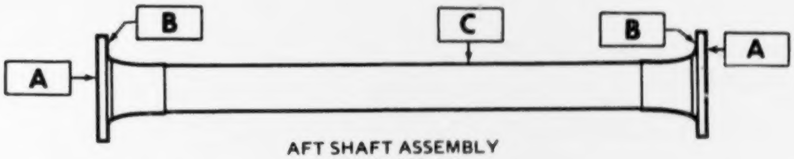
AFT SHAFT ASSEMBLY

406-040-193A

INSPECT

GO TO NEXT PAGE

6-6-4. CLEAN, INSPECT, AND REPAIR AFT SHAFT ASSEMBLY (CONT)



AFT SHAFT ASSEMBLY
406-040-325-105

DAMAGE LOCATION SYMBOLS

$\boxed{A}$ $\boxed{B}$ $\boxed{C}$

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL	Mechanical damage up to 0.002 inch deep around entire circumference shall be polished out, provided that stock removal does not exceed 0.003 inch. Mechanical damage up to 0.005 inch deep, axial or circumferential but not longer than 25 percent of circumference, shall be polished out provided that stock removal does not exceed 0.006 inch.
CORROSION	When corrosion damage is removed from diameter $\boxed{-C-}$ and surfaces $\boxed{-A-}$ and $\boxed{-B-}$, caution must be used to ensure that 0.002 inch (T.I.R.) runout of surfaces is not exceeded. Corrosion damage shall be polished out provided that stock removal does not exceed 0.006 inch.
EDGE CHAMFER	Edge damage shall be removed from surfaces $\boxed{-A-}$ and $\boxed{-B-}$ by using a chamfer of 0.030 inch by 40 to 50 degrees, whose total length when polished to existing surface shall not exceed 0.50 inch, provided that no more than two such repairs are located in the same quadrant of the flange adapter.

NOTES: △1 Surfaces $\boxed{A}$ must be square with centerline of driveshaft within 0.003 inch T.I.R.

△2 Surface $\boxed{B}$ must be parallel with surface $\boxed{A}$ within 0.006.

△3 No cracks are permitted.

406040-252

END OF TASK

6-6-5. REMOVE/INSTALL COUPLING DISC PACK (TYPICAL)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 100–750 Inch-Pounds

Parts:

Nuts as required

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

REMOVE

NOTE

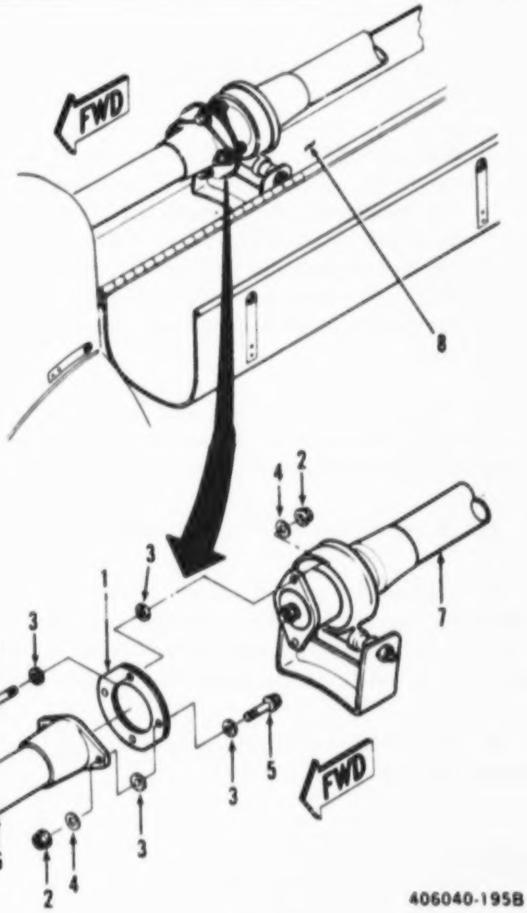
> Support end of driveshaft assembly prior to removing disc pack in order to prevent damage to tailboom or driveshaft assembly.

1. Remove disc pack (1) by removing four nuts (2), 8 chamfered washers (3), four flat washers (4), and four bolts (5) connecting disc pack (1) to driveshaft assemblies (6 and 7) on tailboom (8).

2. Support end of driveshaft assembly (6) prior to removing disc pack (1) in order to prevent damage to tailboom (8) or disc pack (1).

INSPECT

3. Check new disc pack (1) to ensure that indexing flats are alternated 90 degrees.



406040-195B

GO TO NEXT PAGE

6-6-5. REMOVE/INSTALL COUPLING DISC PACK (TYPICAL) (CONT)

INSTALL

CAUTION

If disc pack is to be reused, do not alter stack up. Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nuts by attempting to insert a matching bolt by hand.

4. Install disc pack (1) between driveshaft assemblies (6 and 7) and connect with four bolts (5), 8 chamfered washers (3) , with rounded edges in contact with disc pack (1) and flat side in contact with adapter (9), four flat washers (4), and four nuts (2).

CAUTION

Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nuts by attempting to insert a matching bolt by hand. Torque shall be applied only to nut with bolt held stationary. Turning bolt during torquing may cause gaps in disc pack.

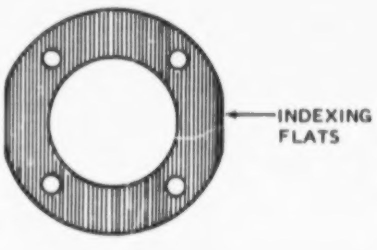
5. Torque four nuts (2) alternately in 20 inch-pound increments until proper torque value of **150-180 INCH-POUNDS** is reached.

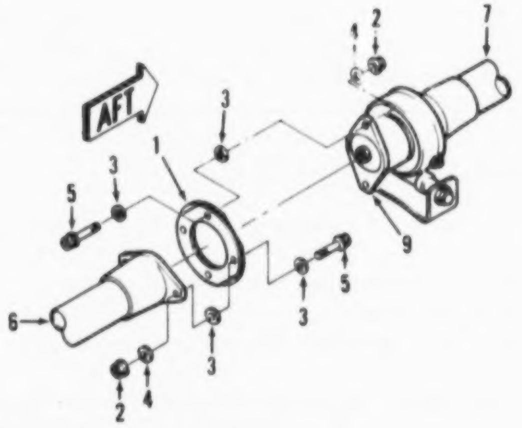
6. Remove support under driveshaft assembly (6).

7. Inspect for gaps between discs in both packs. Gaps in excess of 0.015 inch are unacceptable. If gaps are larger than 0.015 inch, loosen bolts, rotate disc pack back and forth, and uniformly torque bolts.

8. Align tail rotor driveshaft and hanger bearings (Task 6-6-16).

INSPECT





406040-196A

FOLLOW-ON MAINTENANCE

Close tail rotor driveshaft cover

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-6-6. INSPECT DISC PACK ASSEMBLIES

This task covers: Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 150-750 Inch-Pounds

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 55-1520-248-MTF

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)
Tail Rotor Driveshaft Cover Opened

INSPECT

1. Inspect disc packs (1) for scratches, nicks, and cracks.

2. Inspect for gaps between discs within each disc pack (1). Gaps in excess of 0.015 inch are unacceptable. If gaps are more than 0.015 inch, loosen four nuts (2), rotate disc pack (1) back and forth.

3. Damage limits: Maximum removal not to exceed 0.001 inch; cracks or nicks are not allowed.

CAUTION

> Torque shall be applied only to nut (2) with bolt (3) held stationary. Turning bolt during torquing may cause gaps in disc pack. Refer to Task 6-6-5 for proper torquing procedures.

4. Torque four nuts (2) alternately in 20 inch-pound increments until proper torque value of **150-180 INCH-POUNDS** is reached. Repeat for each disc pack (1) location.

INSPECT

FOLLOW-ON MAINTENANCE

Close tail rotor driveshaft cover.

Install aft fairing assembly (Task 2-1-28).

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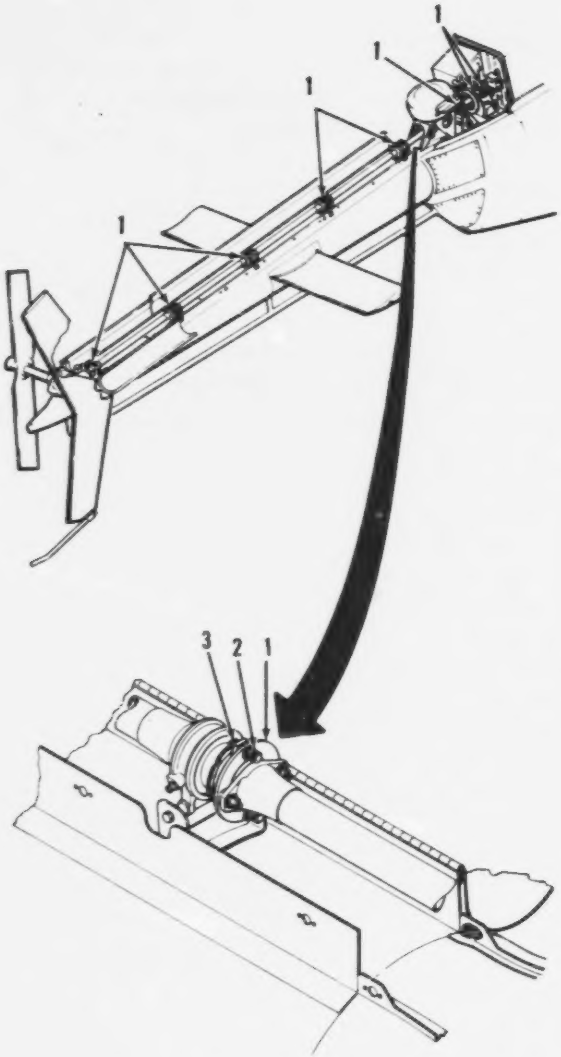
6-6-6. INSPECT DISC PACK ASSEMBLIES (CONT)



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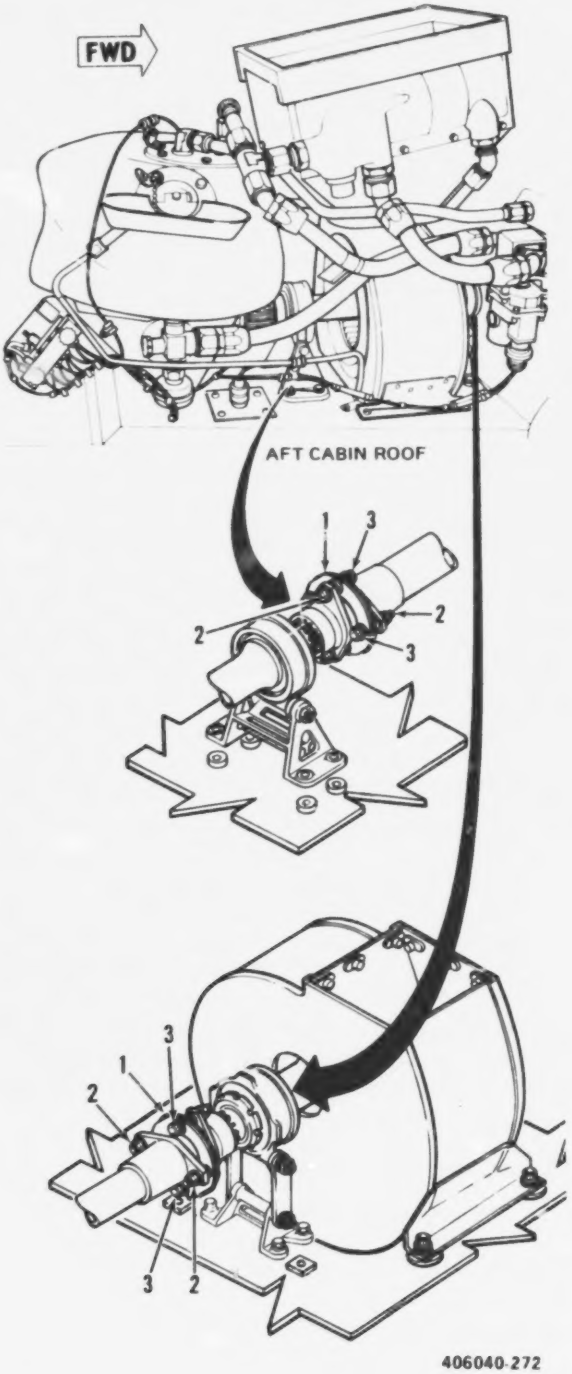

FWD
AFT CABIN ROOF
1
3
2
2
3
3
1
2
3
2

406040-272

END OF TASK

6-6-7. REMOVE/INSTALL SHAFT AND BEARING HANGER ASSEMBLY

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench, 30-150 Inch-Pounds
Torque Wrench, 100-750 Inch-Pounds
Grease Gun

Parts:

Cotter Pin

Materials:

Grease (D15)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Tail Rotor Driveshaft Cover Removed (Task 2-2-11)

GO TO NEXT PAGE

6-6-7. REMOVE/INSTALL SHAFT AND BEARING HANGER ASSEMBLY (CONT)

REMOVE

CAUTION

> Do not scratch or damage shaft assembly during removal of hanger assembly.

These procedures may be used to replace any shaft and bearing hanger assembly on the tailboom.

The tail rotor drive system is to be installed from the tail rotor gearbox forward. All the dimensional tolerance stackup is absorbed by two features:

> Slotted mounting brackets on tailboom at each hanger.
>
> Sliding splined adapter at the aft end of the oil cooler blower.

When any of the boom-mounted shafts is changed, then all of the AN4DD-44 bolt—AN310-4 nut combinations forward of that shaft must be loosened so that the tolerance buildup can be properly absorbed. Retorquing of the bolts then takes place from the replaced shaft forward.

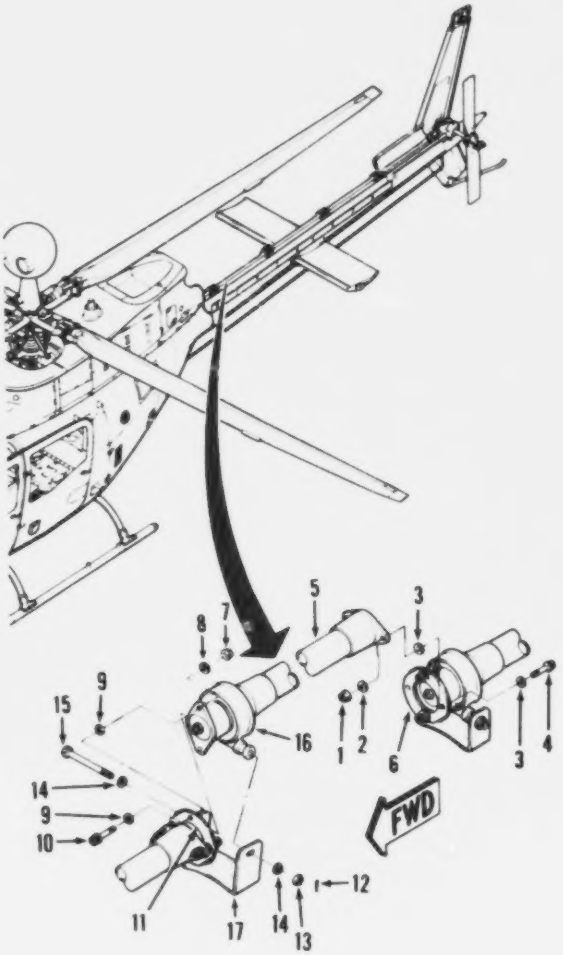
Because of tailboom deflections, the tail rotor driveshaft bearings were designed with larger-than-normal internal clearance. Because of the internal clearance, each of these bearings must be aligned any time the torque is removed on the bolt holding the hanger to the tailboom. Refer to Task 6-6-16 for proper bearing hanger alignment.

1. Remove two nuts (1), two washers (2), four chamfered washers (3), and two bolts (4) to disconnect adapter at aft end of shaft (5) from disc pack (6).

2. Break torque on remaining nuts. Remove two nuts (7), two washers (8), four chamfered washers (9), and two bolts (10) to disconnect adapter at forward end of shaft (5) from disc pack (11).

3. Remove cotter pin (12) and discard.

4. Remove nut (13), two washers (14), and bolt (15) to disconnect bearing hanger (16) from bracket (17) and lift shaft assembly from tailboom.



406040-198C

GO TO NEXT PAGE

6-6-7. REMOVE/INSTALL SHAFT AND BEARING HANGER ASSEMBLY (CONT)

5. Repeat for remaining shaft assemblies on tailboom.

INSTALL

6. Install shaft with bracket (17) aligned with hanger (16) on tailboom. Install washers (14), bolt (15), and nut (13). Do not tighten nut (13) at this time.

NOTE

> When attaching adapters on shaft to disc packs, install chamfered washers with rounded edge in contact with disc pack and flat side in contact with adapter.

7. Connect adapter at forward end of shaft (5) as follows:

   a. Install two bolts (10) with chamfered washer (9) under bolt head, two chamfered washers (9) (if applicable) between disc pack (11) and adapter on shaft (5), washers (8), and nuts (7).

   b. Torque four nuts (7) alternately in 20 inch-pound increments until proper torque value of **150-180 INCH-POUNDS** is obtained.

8. Connect adapter at aft end of shaft (5) as follows:

   a. Install two bolts (4), chamfered washers (3), washers (2), and nuts (1) through disc pack (6) and end of shaft (5).

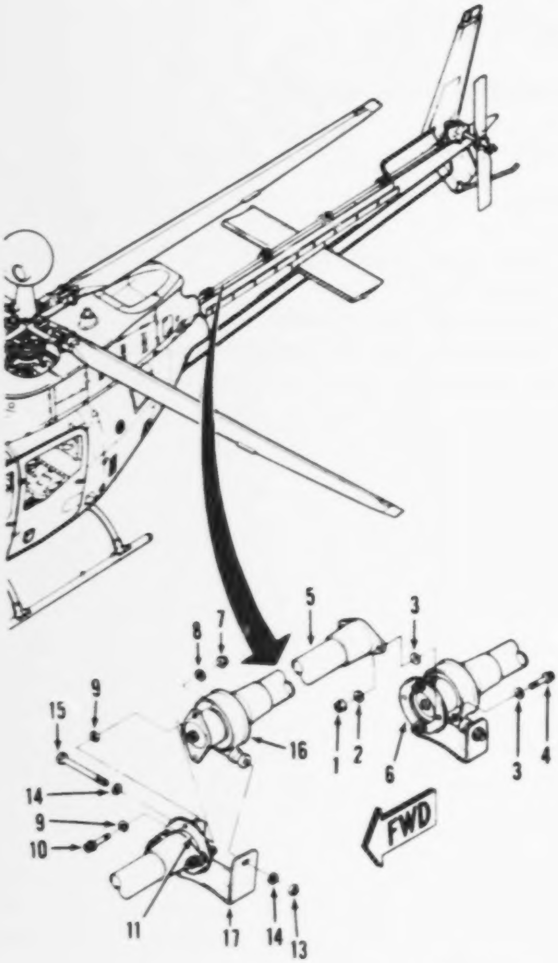
CAUTION

> Reuse only those self-locking nuts that cannot be tightened down with fingers after the locking action engages bolt. Test nuts by attempting to insert a matching bolt by hand. Torque shall be applied only to nut, with bolt held stationary. Turning bolt during torquing may cause gaps in disc pack.

   b. Torque nuts (1) **150-180 INCH-POUNDS**.

9. Lubricate bearing in hanger (16) with grease.

10. Align tail rotor driveshaft and hanger bearings (Task 6-6-16).



406040-289A

FOLLOW-ON MAINTENANCE

Install tail rotor driveshaft cover (Task 2-2-11).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-6-8. REMOVE/INSTALL ADAPTER, BEARING, HANGER, AND SEGMENTED SHAFT (TYPICAL)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Arbor Press
8070 Step Plate Adapter Set (B267)
Torque Wrench, 30-150 Inch-Pounds

Materials:

Corrosion Preventive Compound (D52)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-6-8. REMOVE/INSTALL ADAPTER, BEARING, HANGER, AND SEGMENTED SHAFT (TYPICAL) (CONT)

DISASSEMBLE

1. Remove nut (1), washer (2), washer (3), adapter (4), and hanger (5) from shaft (6).

NOTE

It may be necessary to use an arbor press to push shaft out of hanger and bearing assembly. Protect stud threads during pressing operation.

2. Remove retaining ring (7) from hanger (5).

3. Place hanger (5) in arbor press with plates under edge of hanger to allow room for bearing removal.

4. Press bearing (8) from hanger (5) using 8070 step plate adapter (B267).

INSPECT

ASSEMBLE

CAUTION

Do not let corrosion preventive compound contact seal in bearing. Compound can cause seal to deteriorate.

5. Apply corrosion preventive compound (D52) to outside surface of bearing (8) and inside surface of hanger (5).

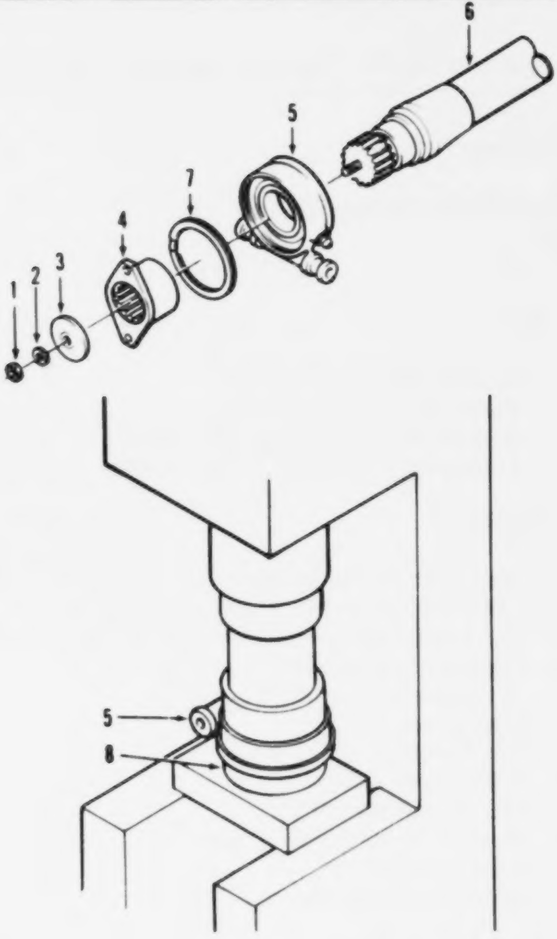
6. Press bearing (8) into hanger (5) using 8070 step plate adapter (B267) and arbor press.

7. Install retainer ring (7) in hanger (5).

8. Apply corrosion preventive compound (D52) to inside surface of bearing (8) and mating surface of shaft (6).

NOTE

Install bearing and hanger assembly with retainer ring side forward so that grease fitting will be on the right side when installed on tailboom.



406040-199

9. Install hanger (5), adapter (4), washer (3), washer (2), and nut (1) on shaft (6).

NOTE

It may be necessary to use an arbor press to push hanger and bearing on shaft.

10. Torque nut (1) **30-50 INCH-POUNDS**.

11. Install shaft on helicopter (Task 6-6-7).

12. Align tail rotor driveshaft and hanger bearings (Task 6-6-16).

INSPECT

END OF TASK

6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Depth Gage, Dial Indicating
Outside Micrometer Set, 0-6 Inches
Telescoping Gage Set, 5/16-6 Inches

Materials:

Methyl-Ethyl-Ketone (D6)
Chemical Conversion Coating (D12)
Corrosion Protective Coating (D133)
Aliphatic Naphtha (D7)
Drycleaning Solvent (D1)
Wiping Rags (D53)
Sandpaper (D11)
Crocus Cloth (D8)
Gloves, Rubber (D119)
Zinc Chromate Primer (D80)
Steel Wool (D57)
Brush Cadmium Plating (D106)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repair

References:

TM 55-1500-345-23
TM 43-0103

General Safety Instructions:

WARNING

Methyl-ethyl-ketone (D6), drycleaning solvent (D1), corrosion protective coating (D133), aliphatic naphtha (D7), and chemical conversion coating (D12) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)

CLEAN SHAFT ASSEMBLY WASHER

1. Clean shaft assembly washer with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry shaft assembly washer with a clean wiping rag (D53).

INSPECT

3. Fluorescent penetrant inspect shaft assembly washer in accordance with TM 43-0103.

4. Inspect shaft assembly washer for surface corrosion.

REPAIR

5. Remove surface corrosion from shaft assembly washer using sandpaper (D11).

6. Blend repaired area into surrounding area with crocus cloth (D8).

7. Apply chemical conversion coating (D12) in accordance with TM 55-1500-345-23.

CLEAN COUPLING ADAPTER

8. Clean coupling adapter with a wiping rag (D53) dampened with drycleaning solvent (D1).

9. Dry coupling adapter with a clean wiping rag (D53).

INSPECT

10. Fluorescent penetrant inspect coupling adapter in accordance with TM 43-0103.

11. Inspect coupling adapter to limits shown.

REPAIR

12. Repair damage to coupling adapter using sandpaper (D11).

13. Blend repaired area into surrounding area with crocus cloth (D8).

14. Apply chemical conversion coating (D12) to coupling adapter in accordance with TM 55-1500-345-23.

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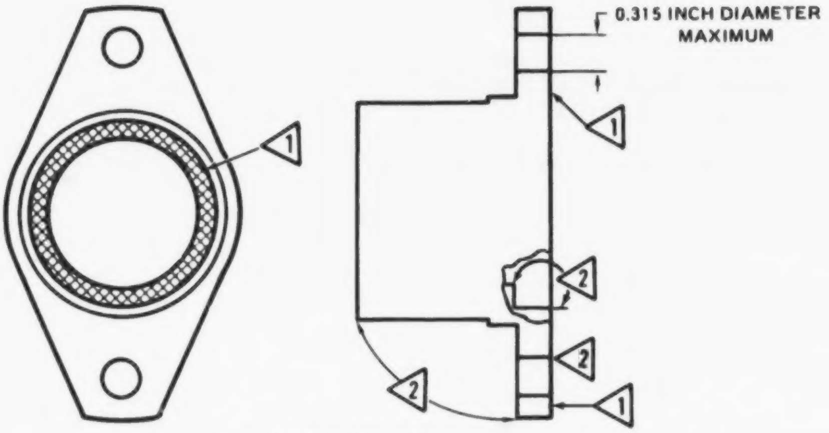
6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)



COUPLING ADAPTER

DAMAGE LOCATION SYMBOLS

▨ ☐

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	▷1 0.001 In. before and after repair	▷2 0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	▷1 0.250 Sq. in.	▷2 1.000 Sq. in.
NUMBER OF REPAIRS	Two per area	
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 40-50° up to 0.500 in. (No more than two per quadrant)	

NOTES:

1. Using 0.108 inch diameter pins, the measurement between pins should be 1.2212 inches minimum to 1.2257 inches maximum.
2. TIR not to exceed 0.004 inch maximum when mounted on tail rotor driveshaft splines.

406040-60C

GO TO NEXT PAGE

6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)

CLEAN HANGER BEARING

15. Clean hanger bearing exterior surface with a wiping rag (D53) dampened with drycleaning solvent (D1).

16. Dry hanger bearing with a clean wiping rag (D53).

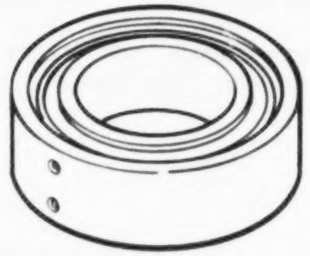
INSPECT

17. Inspect hanger bearing for roughness by holding outer race and turning inner race. If any roughness or ratcheting is noted replace bearing.

18. Inspect hanger bearing for any signs of overheating. Overheating of hanger bearing will be indicated by discoloration of the races and heat damage to the seal. If any signs of overheating are noted, replace bearing. Inspect seals for evidence of excess leakage or deterioration. If signs of deterioration are found, replace bearing.

REPAIR

19. Repair of damage to hanger bearing is not allowed.



HANGER BEARING

	MAX.	MIN.
	INCHES	
O.D.	2.6772	2.6766
I.D.	1.5752	1.5748

406040-200B

GO TO NEXT PAGE

6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)

CLEAN BEARING HANGER

20. Clean bearing hanger with a wiping rag (D53) dampened with drycleaning solvent (D1).

CAUTION

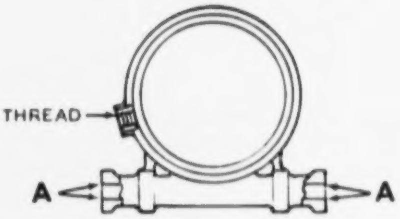
Purge bearing after reassembly to remove any possible residual solvent.

21. Dry bearing hanger with a clean wiping rag (D53).

INSPECT

22. Magnetic particle inspect bearing hanger in accordance with TM 43-0103.

23. Inspect bearing hanger to limits shown.



BEARING HANGER

406040-201A

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6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)

REPAIR

24. Repair damage to bearing hanger using sandpaper (D11).

25. Blend repaired area into surrounding area using crocus cloth (D8).

NOTE

Brush cadmium plating should be omitted from hole A and grease fitting tapped threads of bearing hanger.

26. Apply brush cadmium plating (D106) to repaired area.

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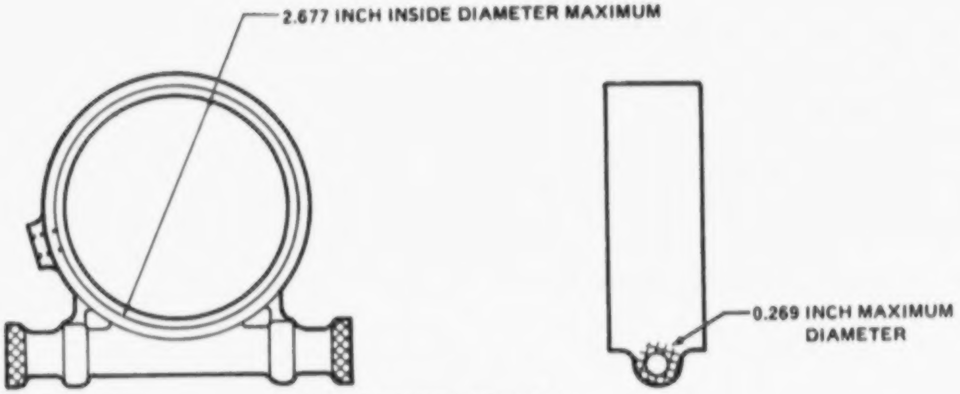
6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)


2.677 INCH INSIDE DIAMETER MAXIMUM
0.269 INCH MAXIMUM DIAMETER

BEARING HANGER ASSEMBLY

DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
	▨	☐ ALL EXTERIOR SURFACES
MECHANICAL AND CORROSION	0.001 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	1.000 Sq. in.
NUMBER OF REPAIRS	Two maximum	Two maximum
THREAD DAMAGE		No thread damage allowed
EDGE CHAMFER TO REMOVE DAMAGE	0.030 X 40–50° for 0.500 in.	

NOTE: CRACKS ARE NOT PERMITTED.

406040-9C

GO TO NEXT PAGE

CLEAN SEGMENTED SHAFT ASSEMBLY

27. Clean segmented shaft assembly with a wiping rag (D53) dampened with aliphatic naphtha (D7).

28. Dry segmented shaft assembly with a clean wiping rag (D53).

29. Remove corrosion protective coating from segmented shaft assembly with a wiping rag (D53) dampened with methyl-ethyl-ketone (D6).

INSPECT

30. Magnetic particle inspect segmented shaft assembly in accordance with TM 43-0103.

31. Inspect segmented shaft assembly to limits shown.

32. Inspect splines to limits shown.

33. Inspect for bond separations Area B.

34. Inspect stud for thread damage.

35. Inspect balance weights for security and presence.

NOTE

Segmented shaft must be replaced if balance weight is debonded or missing. Return shaft to depot overhaul facility for repair.

REPAIR

36. Repair damage to segmented shaft assembly using sandpaper (D11).

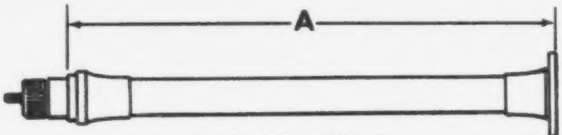
37. Blend repaired area into surrounding area with crocus cloth (D8).

38. Brush chemical conversion coating (D12) on repaired areas.

GO TO NEXT PAGE

6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)

39. Apply two coats of corrosion protective coating (D133) to repairs in area A of segmented shaft assembly. Allow 30 minutes drying time between first and second coats. Allow to cure at ambient room temperature for 48 hours.



SHAFT SEGMENT

406040-202A

INSPECT

SPLINE WEAR AND DAMAGE LIMITS

40. Remove damage to upper edges of teeth using edge break of 0.030 inch (maximum) x 40–50 degrees. Repair may extend to full length of teeth. One side only may be chamfered on any tooth. No more than two adjacent teeth may be reworked.

41. Repair of damage to top surfaces of teeth is limited to maximum of one repair per tooth. 0.010 inch maximum up to 0.250 inch long on all teeth; 0.0001 inch maximum up to 100 percent of surface of all teeth.

42. Damage to ends (stud ends only) of all teeth may be removed by chamfer up to 0.060 inch x 40–50 degrees.

43. Only damage which can be removed using steel wool (D57) or sandpaper (D11) is allowed for sides and roots of all teeth.

STUD

44. Replace damaged stud with AN125969 through AN125974 stud.

45. Install stud with unreduced zinc chromate primer (D80) to an installed height of 0.610–0.670 inch. Torque **50-95 INCH-POUNDS.**

INSPECT

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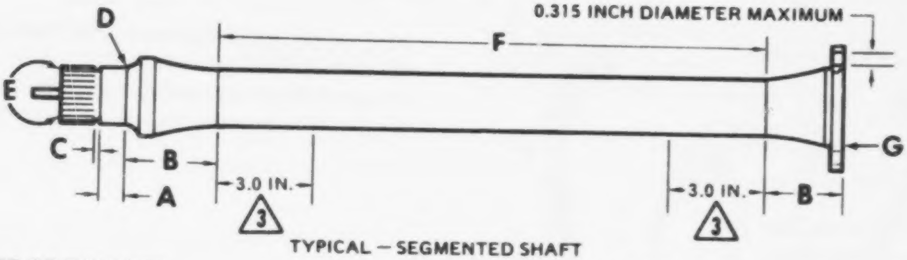
6-6-9. CLEAN, INSPECT, AND REPAIR COMPONENTS OF SHAFT AND BEARING HANGER ASSEMBLY (CONT)



TYPICAL — SEGMENTED SHAFT

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	
AREA	
A (Diameter)	0.0001 In. up to 100 percent of circumference
B	0.005 In. up to 100 percent of circumference
C (Diameter)	0.001 In. up to 100 percent of circumference
D (Shoulder)	0.001 In. up to 100 percent of circumference
E (Surface)	0.010 In. up to 100 percent of surface area
F (Diameter)	0.005 In. up to one sq. in.
F (Diameter)	0.005 In. up to 25 percent of circumference, 0.850 in wide
F (Diameter)	0.002 In. up to 100 percent of circumference, 0.210 in. wide
G (Surface)	0.001 In. up to 100 percent of surface area
NUMBER OF REPAIRS	Five maximum
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 40-50° up to 0.500 in. (No more than 2 per quadrant)

NOTES:

1. Repairs are to be made with 0.25 inch minimum radius.
2. Using 0.1200 inch diameter pins, the measurement over pins minimum is 1.5525 inches and maximum is 1.5560 inches.
3. To check driveshaft TIR runout, mount shaft in V blocks where shown.
4. TIR for Diameter A and Surface D is 0.002 inch maximum and in area G is 0.004 inch maximum.

406040-61B

END OF TASK

6-6-10. REMOVE FAN SHAFT ASSEMBLY

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Personnel Required:

67S Scout Helicopter Repairer

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)
Oil Cooler Removed (Task 6-8-22)
Forward Shaft Assembly Removed (Task 6-6-1)
Aft Shaft Assembly Removed (Task 6-6-3)

GO TO NEXT PAGE

6-6-10. REMOVE FAN SHAFT ASSEMBLY (CONT)

1. Remove screw (1), washer (2), from clamp (3) securing transmission oil outlet line (4) to transition duct (5).

CAUTION

> Cap all disconnected line and fittings. Failure to cap lines or fittings can lead to oil system contamination.

2. Disconnect transmission oil outlet line fitting (6) from fitting (7). Remove transmission oil outlet line (4).

3. Remove screw (8), washer (9), and spacer (10) from clamp (11) securing transmission oil inlet line (12) to transition duct (5). Disconnect line (12) and remove.

4. Disconnect oil outlet line (4) and oil inlet line (12) from oil cooler (Task 6-8-22). Remove lines from helicopter.

5. Remove 12 screws (13) and 11 washers (14) securing transition duct (5) to blower housing (15). Remove transition duct (5).

NOTE

> Fan shaft assembly (with coupling disc packs and adapters installed) may be removed with aft firewall pan removed.

6. From forward side of engine aft firewall (16), remove coupling disc pack and adapter (17) by removing four nuts (18), 8 or 10 chamfered washers (as applicable), four flat washers (20), and four bolts (21) from forward end of fan shaft assembly (22).

7. Remove coupling disc pack and adapter (17) from aft end of fan shaft assembly (22).

8. Remove aft fan shaft assembly (22) from helicopter.

NOTE

> Fan shaft assembly should be supported at both ends to aid in removing bearing hangers from brackets.

9. Remove nuts, washers, screws and firewall ring halves from forward side of firewall.

10. Cut lockwire and remove four bolts (23) and four washers (24).

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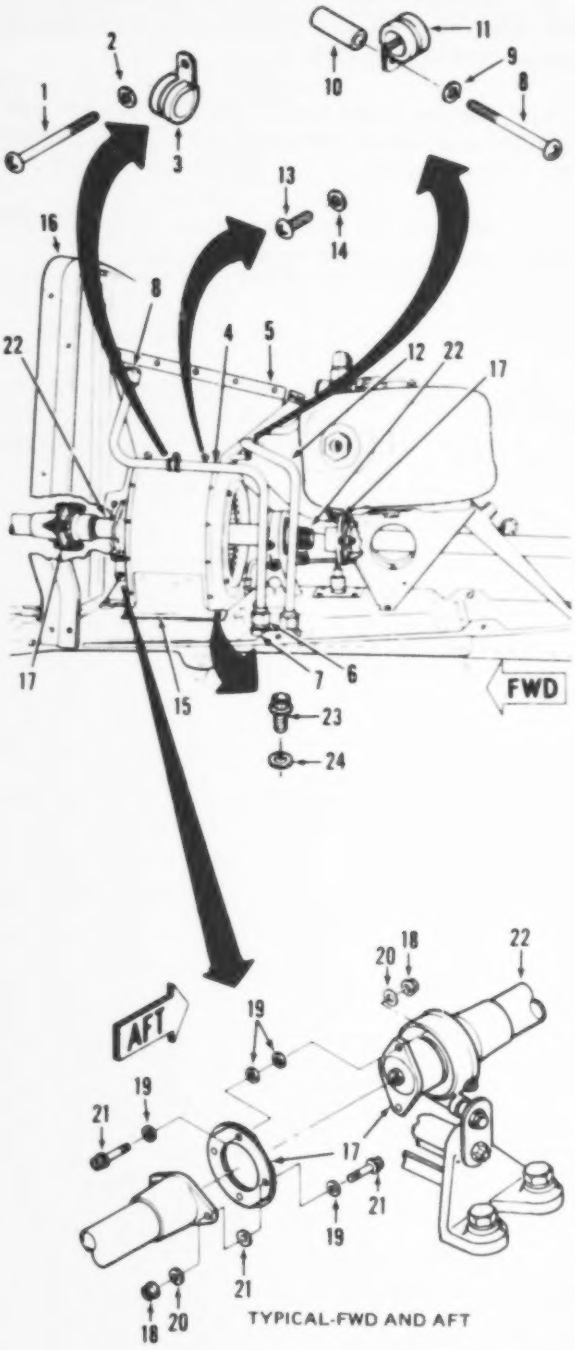


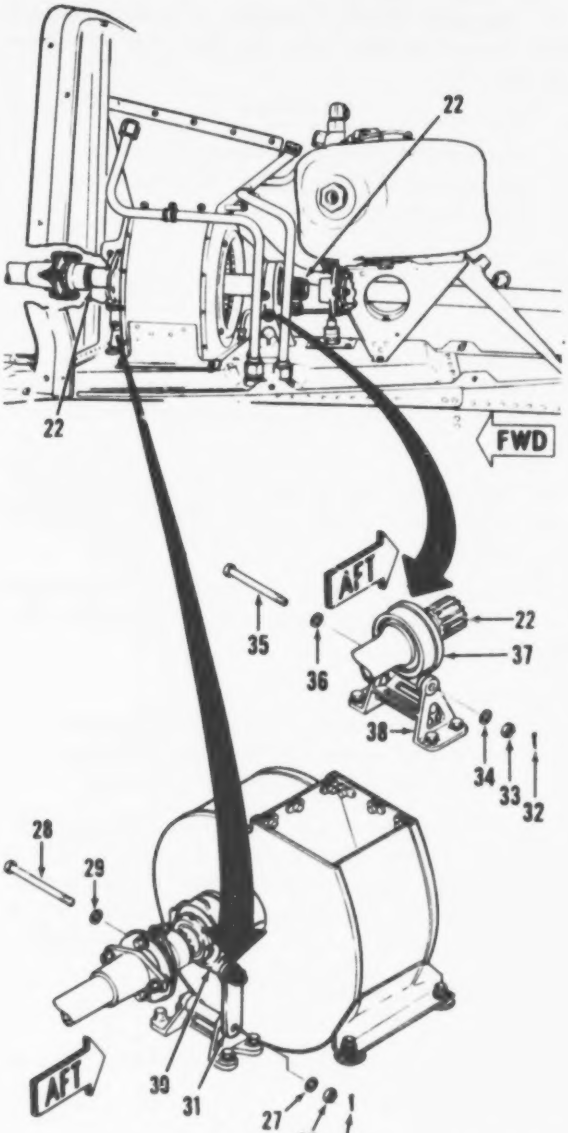
406040-294

6-6-10. REMOVE FAN SHAFT ASSEMBLY (CONT)

11. Remove cotter pin (25), nut (26), washer (27), bolt (28), and washer (31) securing forward bearing hanger (30) to links (31).

12. Remove cotter pin (32), nut (33), washer (34), bolt (35), and washer (36) securing aft bearing hanger (37) to bracket (38).

13. Remove fan shaft assembly (22) from aft cabin roof and place on suitable surface.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FWD
AFT
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406040-295

END OF TASK

6-6-11. REMOVE/INSTALL BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Spanner Wrench (B8)
Spline Wrench (B102)
8070 Step Plate Adapter Set (B267)
Arbor Press
Knife Blade Balancer (Work Aid) (H-194)
Torque Wrench, 30-150 Inch-Pounds
Torque Wrench, 100-750 Inch-Pounds
Pressing Sleeve (Work Aid)

Parts:

Key Washer (2)
Nut, Steel, Self-Locking

Materials:

Corrosion Preventive Compound (D52)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-6-11. REMOVE/INSTALL BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

REMOVE BLOWER HOUSING

1. Remove four screws (1) from inlet (2) and remove inlet (2) from blower housing (3).

2. Remove blower housing (3) from fan shaft (4), forward and aft bearing and hanger assemblies (5 and 6), and impeller (7).

REMOVE FORWARD BEARING AND HANGER ASSEMBLY

3. Lift tangs of key washer (8) from slots in spanner nut (9).

4. While holding splines of fan shaft (4) with spline wrench (B102), remove spanner nut (9) with spanner wrench (B8).

5. Remove and discard key washer (8).

6. Remove forward bearing and hanger assembly (5) from fan shaft (4) using suitable plug for end of fan shaft (4) and bearing puller.

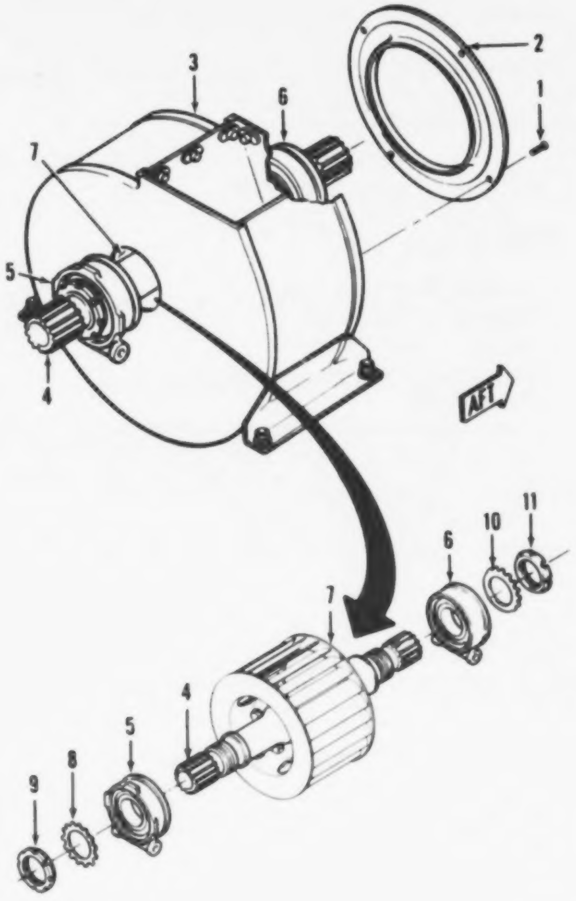
REMOVE AFT BEARING AND HANGER ASSEMBLY

7. Lift tangs of key washer (10) from slots in spanner nut (11).

8. While holding splines of fan shaft (4) with spline wrench (B102) remove spanner nut (11).

9. Remove and discard key washer (10).

10. Remove aft bearing and hanger (6) from fan shaft (4) using 8070 step plate adapter (B267) for end of fan shaft (4) and arbor press. Discard bearings, as pressure applied to the outer race during removal damages bearing.



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6-6-11. REMOVE/INSTALL BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

REMOVE HANGER BEARING (TYPICAL)

11. Remove retaining ring (12) securing bearing (13) to bearing hanger (5 or 6).

12. Press bearing (13) from bearing hanger (5 or 6) using arbor press (Task 6-6-8).

REMOVE IMPELLER

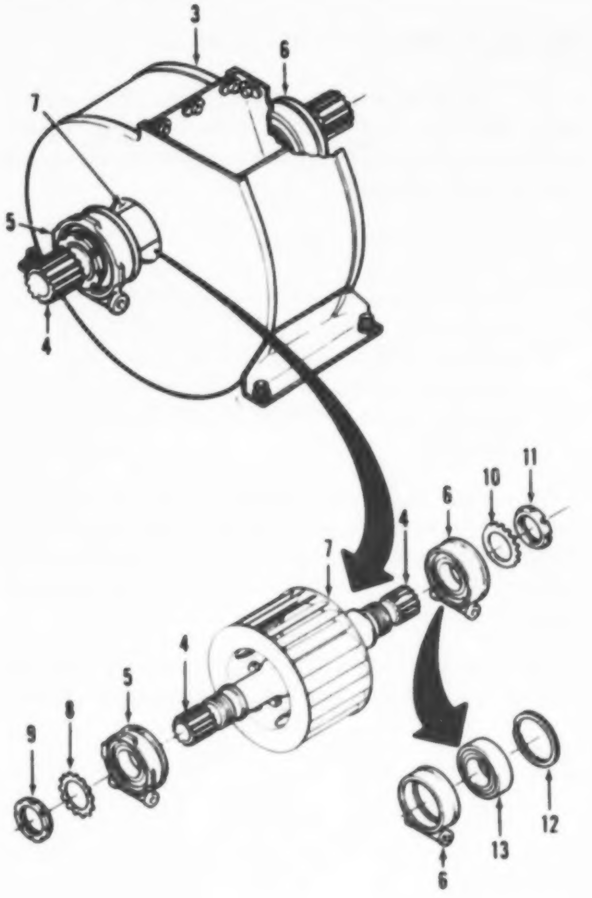
13. Remove four nuts (14), eight washers (15), and four bolts (16).

14. Remove impeller (7) from fan shaft (4).

15. Clean, inspect, and repair bearing hanger (6) bearing (13), impeller fan shaft (4), and blower housing (3) (Task 6-6-12).

INSTALL IMPELLER

16. Install impeller (7) on fan shaft (4) with four bolts (16), eight washers (15), and four nuts (14), do not torque four nuts (14) at this time.



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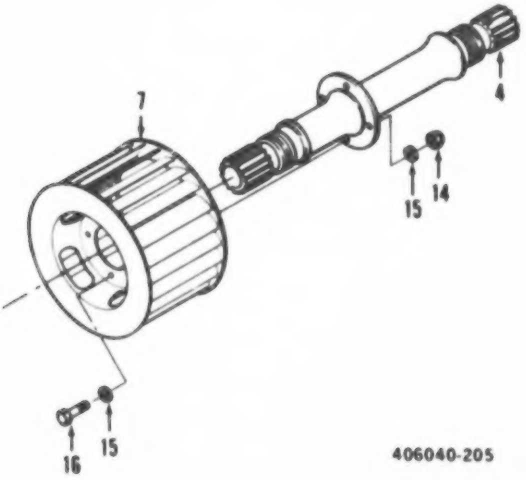

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6-6-11. REMOVE/INSTALL BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

BALANCE IMPELLER AND FAN SHAFT

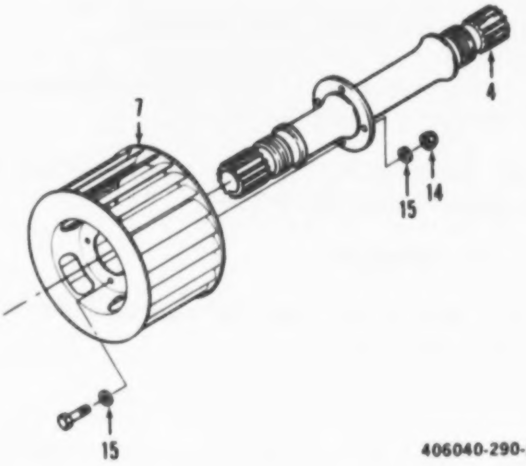
17. Place impeller (7) and fan shaft (4) on a knife edge balancer (17) (H194) with balancer blades positioned inboard of the keyway slots (18) on bearing journal (19) surfaces.

NOTE

> A maximum of nine, AN960-416L or equivalent thickness of AN960-416 washers may be used on one bolt, and a maximum of two NAS604-4 bolts may be substituted for NAS6604-3 bolts to obtain balance.

18. Add additional washers (15) to balance impeller (7) and fan shaft (4) as nearly as possible within limits obtained with one final AN960-416L washer (15) (equal to 0.02 inch-ounces in respect to bearing journal (19) axis).

19. When balance of impeller (7) and fan shaft (4) is achieved, torque nuts (14) **50-70 INCH-POUNDS**.



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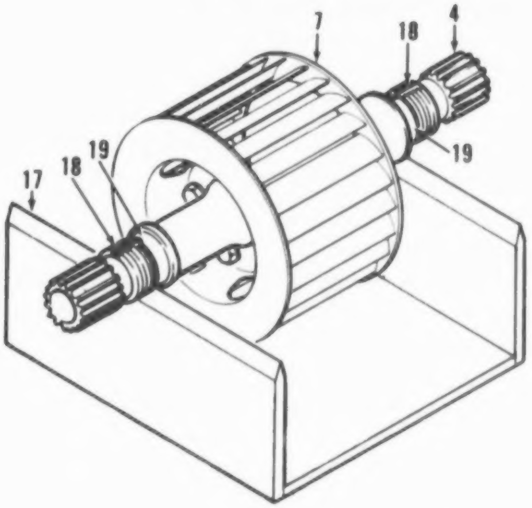

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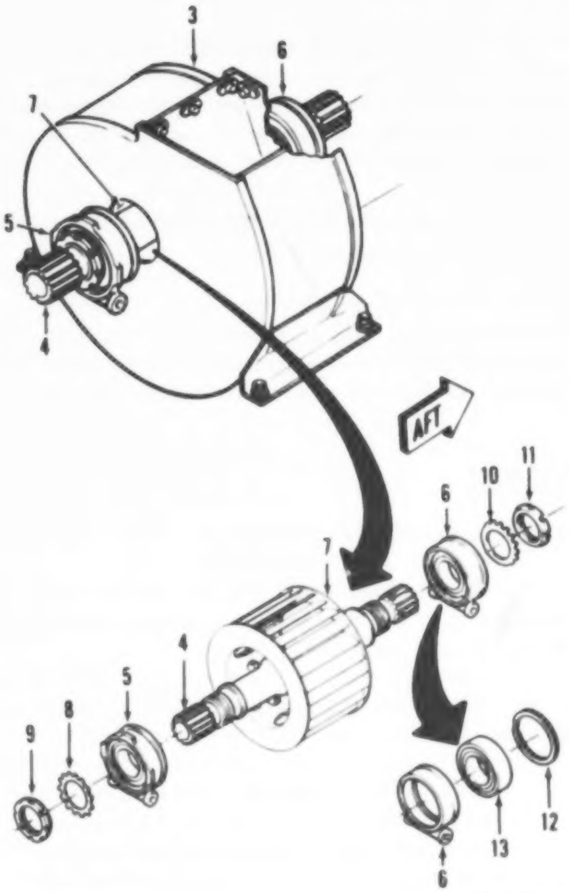
6-6-11. REMOVE/INSTALL BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)



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INSTALL HANGER BEARING (TYPICAL)

CAUTION

> Do not allow corrosion preventive compound to contact bearing seal, for deterioration of seal will result.

20. Apply a thin coat of corrosion preventive compound (D52) to inner diameter of bearing hanger (5 and 6) and inner and outer diameter of bearing (13).

21. Press bearing (13) into bearing hanger (5 or 6) with an arbor press, using 8070 step plate adapter (B267).

22. Secure bearing (13) in bearing hanger (5 or 6) with retainer ring (12).

INSTALL AFT BEARING HANGER

23. Using pressing sleeve and only pressing against inner race of bearing (13), press aft bearing hanger (6) on aft end of fan shaft (4) (towards open end of impeller (7)) until fully seated.

24. Install key washer (10) and spanner nut (11) on fan shaft (4).

25. While holding forward end of fan shaft (4) with spline wrench (B102), torque spanner nut (11) **200-300 INCH-POUNDS** and secure by bending tang of key washer (10) into slot of spanner nut (11).

INSPECT

GO TO NEXT PAGE

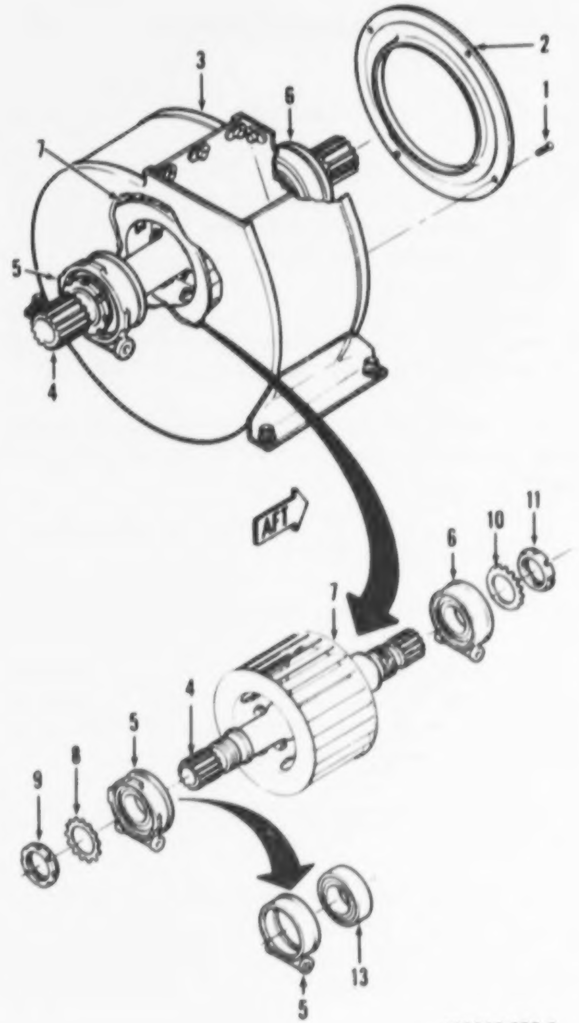
6-6-11. REMOVE/INSTALL BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

INSTALL FORWARD BEARING HANGER

26. Using pressing sleeve with arbor press and only pressing against inner race of bearing (13), press forward bearing hanger (5) on forward end of fan shaft (4) until bearing hanger (5) is fully seated.

27. Install spanner nut (9) with key washer (8) on forward end of fan shaft (4).

28. While holding aft end of fan shaft (4) with spline wrench, torque spanner nut (9) **200-300 INCH-POUNDS** and secure by bending tang of key washer (8) into slot of spanner nut (9).



406040-290-4

INSPECT

INSTALL BLOWER HOUSING

29. Install blower housing (3) on fan shaft (4) forward and aft bearing and hanger assemblies (5 and 6) and impeller (7).

30. Install inlet (2) on blower housing (3) with four screws (1).

NOTE

> If fan shaft assembly is not being installed at this time fan shaft should be wrapped with suitable material to prevent fan shaft from rubbing blower housing openings.

FOLLOW-ON MAINTENANCE

Align tail rotor driveshaft and hanger bearings (Task 6-6-16).

END OF TASK

6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Aircraft Mechanic Tool Kit
Micrometer Set, 0–6 Inches
Fine India Stone
Dial Indicator
Honing Tool
Gun, Air Blow
Separator, Oil and Water
Hose Assembly
Air Compressor

Materials:

Sandpaper (D11)
Crocus Cloth (D8)
Drycleaning Solvent (D1)
Wiping Rags (D53)
Brush Cadmium Plating (D106)
Epoxy Zinc Coating (D137)
Chemical Conversion Coating (D12)
Zinc Chromate Primer (D80)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68D Aircraft Powertrain Repairer

References:

TM 43-0103
TM 55-1500-345-23
TM 55-1500-204-25/1

General Safety Instructions:

WARNING

Drycleaning solvent (D1), zinc chromate primer (D80), epoxy zinc coating (D137), and chemical conversion coating (D12) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CLEAN BEARING HANGERS

1. Clean bearing hanger with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry bearing hanger with a clean wiping rag (D53).

INSPECT BEARING HANGER

3. Fluorescent penetrant inspect bearing hanger in accordance with TM 43-0103.

4. Inspect bearing hanger to limits shown.

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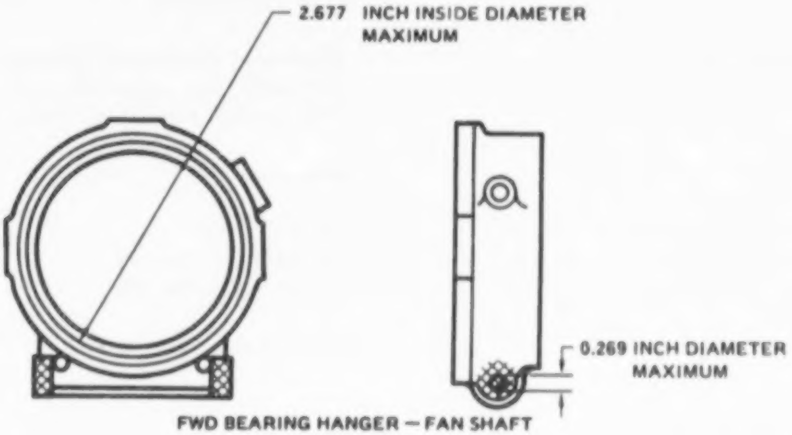
6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)


2.677 INCH INSIDE DIAMETER MAXIMUM
0.269 INCH DIAMETER MAXIMUM

FWD BEARING HANGER — FAN SHAFT

	DAMAGE LOCATION SYMBOLS	
	▨	☐
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.001 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.	1.000 Sq. in
NUMBER OF REPAIRS	Two maximum	
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 40-50° for 0.500 inch	
THREAD DAMAGE:	No thread damage allowed	

406040-59B

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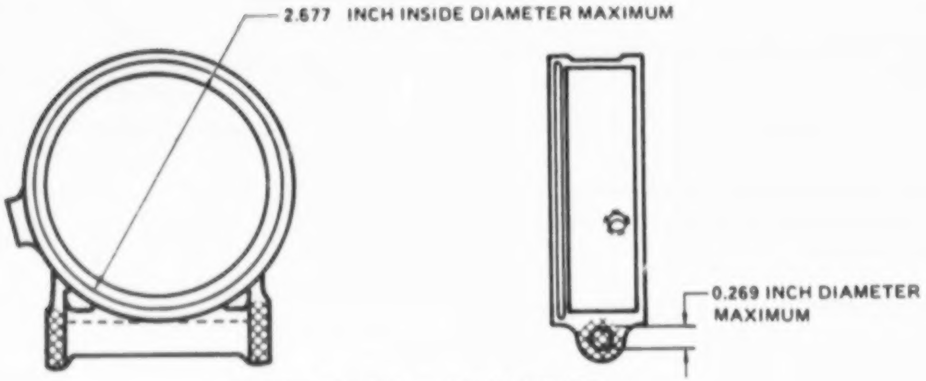
6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)


2.677 INCH INSIDE DIAMETER MAXIMUM
0.269 INCH DIAMETER MAXIMUM

BEARING HANGER — AFT FAN SHAFT

	DAMAGE LOCATION SYMBOLS	
	▨	▭
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL AND CORROSION	0.001 In. before and after repair	0.005 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.	1.000 Sq. in.
NUMBER OF REPAIRS	Two maximum	
THREAD DAMAGE	No thread damage allowed	
EDGE CHAMFER TO REMOVE DAMAGE	0.030 X 40-50° for 0.500 in.	

406040-8B

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6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

REPAIR BEARING HANGERS

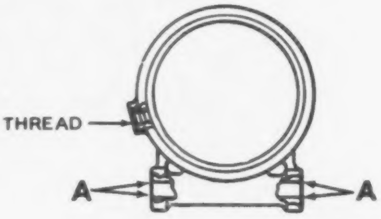
5. Repair damage to bearing hangers using sandpaper (D11).

6. Blend repaired area into surrounding area using crocus cloth (D8).

NOTE

Brush cadmium plating should be omitted from hole A and grease fitting taped threads of bearing hangers.

7. Apply brush cadmium plating (D106) to repaired area.



BEARING HANGER

406040-207A

INSPECT

CLEAN HANGER BEARING

CAUTION

Purge bearing after reassembly to ensure removal of any residual solvent.

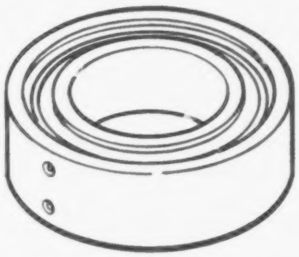
8. Clean hanger bearing exterior surface with a wiping rag (D53) dampened with drycleaning solvent (D1).

9. Dry hanger bearing with a clean wiping rag (D53).

INSPECT HANGER BEARING

NOTE

Lubrication expelled from the bearing is not cause for rejection of the bearing. The expelled lubrication usually is the result of over lubrication. Do not wash, clean or spray the bearing or hanger assembly with any type of solution during inspection. Use only clean cloths or shop towels to clean the assembly.



HANGER BEARING

	MAX.	MIN.
	INCHES	
O.D.	2.6772	2.6766
I.D.	1.5752	1.5748

406040-200B

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6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

10. Inspect hanger bearing for roughness by holding outer race and turning inner race. If any roughness or ratcheting is noted replace bearing. Inspect seals for evidence of excess leakage or deterioration. If signs of deterioration are found, replace bearing.

11. Inspect hanger bearing for any signs of overheating. Overheating of hanger bearing will be indicated by discoloration of the races and heat damage to the seal. If any signs of overheating are noted replace bearing.

REPAIR HANGER BEARING

12. Repair of damage to hanger bearing is not allowed.

CLEAN IMPELLER

13. Clean impeller with drycleaning solvent (D1) and a brush.

WARNING

Compressed air is dangerous when directed toward yourself or another person. Use goggles to protect eyes and face. Do not exceed 30 psig. Do not direct airstream toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.

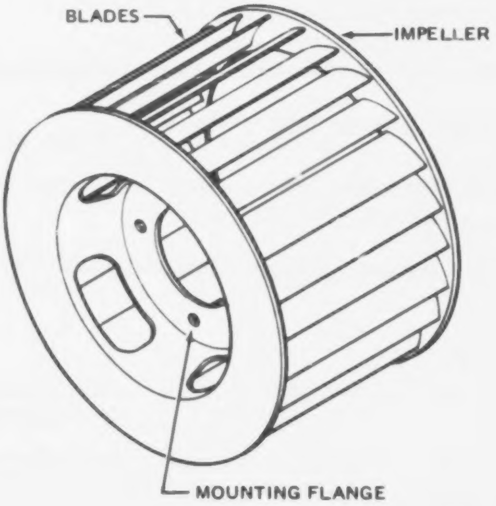
14. Dry impeller with filtered compressed air.

INSPECT

15. Inspect steel impeller using magnetic particle inspection and inspect aluminum alloy impeller housing using fluorescent penetrant in accordance with TM 43-0103.

16. Inspect impeller for cracks, particularly at mounting flange and individual blades. If any blades are cracked, dented, bent or missing, replace impeller.

17. Inspect impeller for missing primer.



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6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

REPAIR

CAUTION

It is important to maintain dynamic balance of impeller. Do not do anything that will disturb balance. In applying very thin uniform coat of zinc chromate primer (D80), exercise care that zinc chromate primer does not run into corners and form thick deposits that disturb dynamic balance of impeller. An unbalanced condition of impeller can cause damage to tail rotor drive train.

18. Apply a very thin uniform coat of zinc chromate primer (D80) in accordance with TM 55-1500-345-23.

CLEAN FAN SHAFT

19. Clean fan shaft with a wiping rag (D53) dampened with drycleaning solvent (D1).

20. Dry fan shaft with a clean wiping rag (D53).

INSPECT FAN SHAFT

21. Magnetic particle inspect fan shaft in accordance with TM 43-0103.

22. Inspect fan shaft to limits shown.

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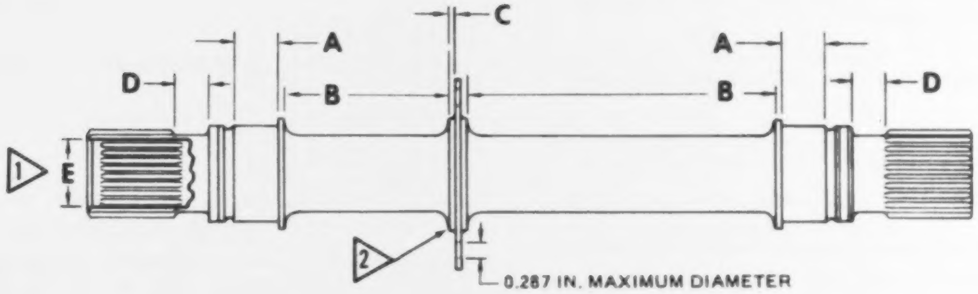
6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)



FAN SHAFT

DAMAGE LOCATION SYMBOLS

▭

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH
MECHANICAL AND CORROSION	

AREA		MINIMUM	MAXIMUM
A	OD	1.574	1.575
B	OD	1.245	1.260 with maximum repair of 0.005 inch in a 1 square inch area
C	OD	1.842	1.844
D	OD	1.240	1.260 with maximum repair of 0.005 inch in a 1 square inch area
E	ID	1.085	1.110

NUMBER OF REPAIRS	Five maximum
EDGE CHAMFER TO DAMAGE	0.030 In. x 40-50° for 0.500 in., two per quadrant maximum

NOTES: ▷1 Repair to be uniform by honing.

▷2 Check runout TIR, 0.001 inch maximum on pilot diameter and 0.005 inch maximum on face with shaft mounted on V blocks at bearing journals.

3. Using 0.1200 inch diameter pins, the measurement over pins minimum is 1.546 inches and maximum is 1.556 inches. Blend step, if any, between worn and unworn areas of spline teeth using fine india stone.

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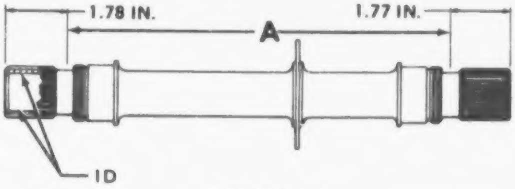
6-6-12. CLEAN, INSPECT, AND REPAIR BEARING HANGERS, BEARING, IMPELLER, FAN SHAFT, AND BLOWER HOUSING (CONT)

REPAIR FAN SHAFT

23. Repair damage to inside diameter of fan shaft by honing to limits shown.

24. Repair damage to fan shaft using sandpaper (D11).

25. Blend repaired area into surrounding area using crocus cloth (D8).



FAN SHAFT

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26. Protect reworked inside diameter of fan shaft by filling and draining with epoxy zinc coating (D137). Stand fan shaft on end while draining to avoid causing imbalance.

NOTE

Brush cadmium plating should be omitted from inside diameter of fan shaft.

27. Apply brush cadmium plating (D106) to repairs in area A.

INSPECT

CLEAN BLOWER HOUSING

28. Clean blower housing with a wiping rag (D53) dampened with drycleaning solvent (D1).

29. Dry blower housing with a clean wiping rag (D53).

INSPECT BLOWER HOUSING

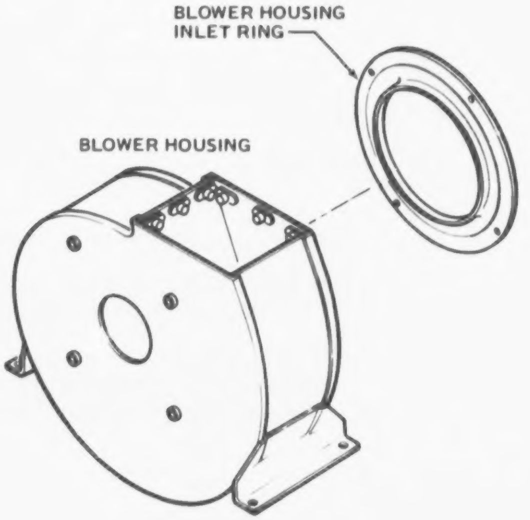
30. Inspect blower housing for cracks, dents, loose rivets, loose nutplates, and missing primer.

REPAIR BLOWER HOUSING

31. Repair blower housing using standard sheet-metal repair procedures in accordance with TM 55-1500-204-25/1.

32. Apply chemical conversion coating (D12) to repaired area in accordance with TM 55-1500-345-23.

33. Apply zinc chromate primer (D80) to repaired area in accordance with TM 55-1500-345-23.



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END OF TASK

6-6-13. INSTALL FAN SHAFT ASSEMBLY

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 30–150 Inch-Pounds
Torque Wrench, 0–30 Inch-Pounds

Parts:

Cotter Pin (2)

Materials:

Anti-Seize Compound (D111)
Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)
Oil Cooler Removed (Task 6-8-22)
Forward Shaft Assembly Removed (Task 6-6-1)
Aft Shaft Assembly Removed (Task 6-6-3)

GO TO NEXT PAGE

6-6-13. INSTALL FAN SHAFT ASSEMBLY (CONT)

NOTE

Fan shaft assembly should be supported at both ends to aid in installation.

1. Install fan shaft assembly (1) with blower housing (2) seated in hole in aft cabin roof with large opening of blower housing (2) facing aft.

2. Install forward bearing hanger (3) between links (4) and secure with bolt (5), washers (6 and 7), and nut (8).

3. Torque nut (8) **50-70 INCH-POUNDS** and secure with cotter pin (9).

4. Install aft bearing hanger (10) on bracket (11) and secure with bolt (12), washers (13 and 14), and nut (15).

5. Torque nut (15) **50-70 INCH-POUNDS** and secure with cotter pin (16).

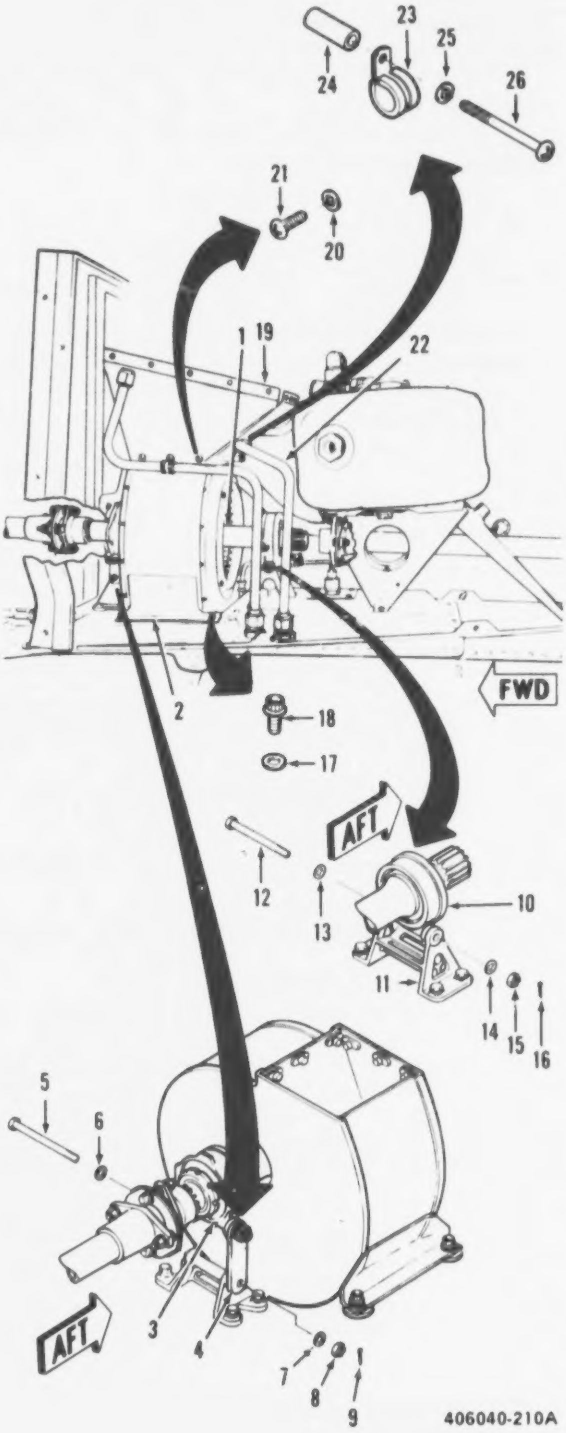
6. Install blower housing (2) on aft cabin roof with four washers (17) and four bolts (18).

7. Torque bolts **20-25 INCH-POUNDS** and secure in pairs with lockwire (D4).

INSTALL TRANSITION DUCT

8. Install transition duct (19) on blower housing (2) with 12 washers (20) and 12 screws (21).

9. Install engine oil drain line (22). Secure engine oil drain line (22) to transition duct (19) with clamp (23), spacer (24), washer (25), and screw (26).



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6-6-13. INSTALL FAN SHAFT ASSEMBLY (CONT)

10. Secure transmission oil outlet line (27) to transition duct (19) with clamp (28), spacer (29), washer (30), and screw (31).

11. Connect transmission oil outlet line fitting (32) to aft cabin roof mounted fitting (33).

12. Connect oil outlet line (27) and oil drain line (22) to oil cooler (Task 6-8-24).

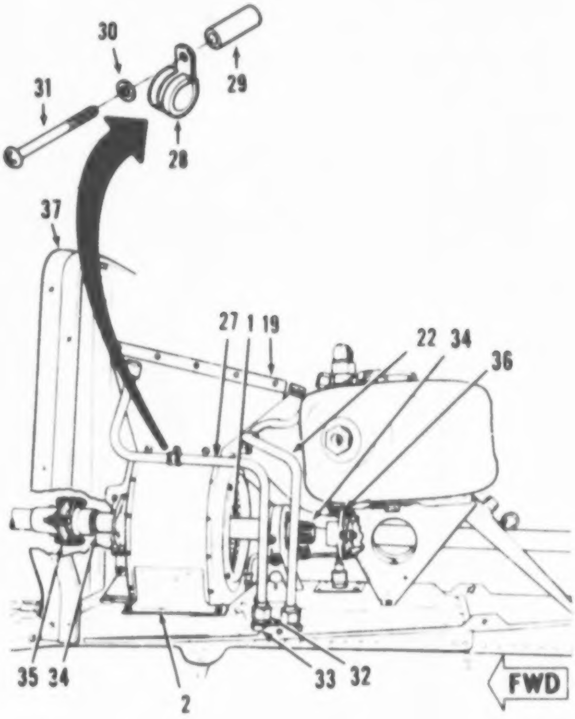
NOTE

Fan shaft assembly (with coupling disc packs and adapters attached) may be installed with aft firewall pan removed.

13. Apply a light coat of anti-seize compound (D111) to fan shaft assembly splines (34) and splines of coupling disc pack and adapters (35 and 36).

14. From forward side of aft engine firewall (37) install coupling disc pack and adapter (35) on fan shaft assembly splines (34).

15. Install coupling disc pack and adapter (36) on fan shaft assembly splines (34) on aft end of fan shaft assembly (1).



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INSPECT

FOLLOW-ON MAINTENANCE

Install oil cooler (Task 6-8-24).

Install aft shaft assembly (Task 6-6-3).

Install forward shaft assembly (Task 6-6-1).

Align tail rotor driveshaft and hanger bearings (Task 6-6-16).

Install aft fairing assembly (Task 2-1-28).

END OF TASK

6-6-14. REMOVE/INSTALL FAN SHAFT BEARING HANGER BRACKETS (FORWARD AND AFT)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 30-150 Inch-Pounds

Parts:

Cotter Pin (2)

Materials:

Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)

GO TO NEXT PAGE

REMOVE AFT BEARING HANGER BRACKET

1. Remove cotter pin (1), castellated nut (2), washer (3), bolt (4), and washer (5) securing aft bearing hanger (6) to aft bearing hanger bracket (7).

2. Cut lockwire and remove four bolts (8) and four washers (9) from aft bearing hanger bracket (7).

CAUTION

> Fan shaft must be supported to avoid damage to the disc packs.

3. Remove aft bearing hanger bracket (7) from aft cabin roof.

REMOVE FORWARD BEARING HANGER BRACKET

4. Remove cotter pin (10), castellated nut (11), washer (12), bolt (13), and washer (14) securing links (15) to forward bearing hanger bracket (16).

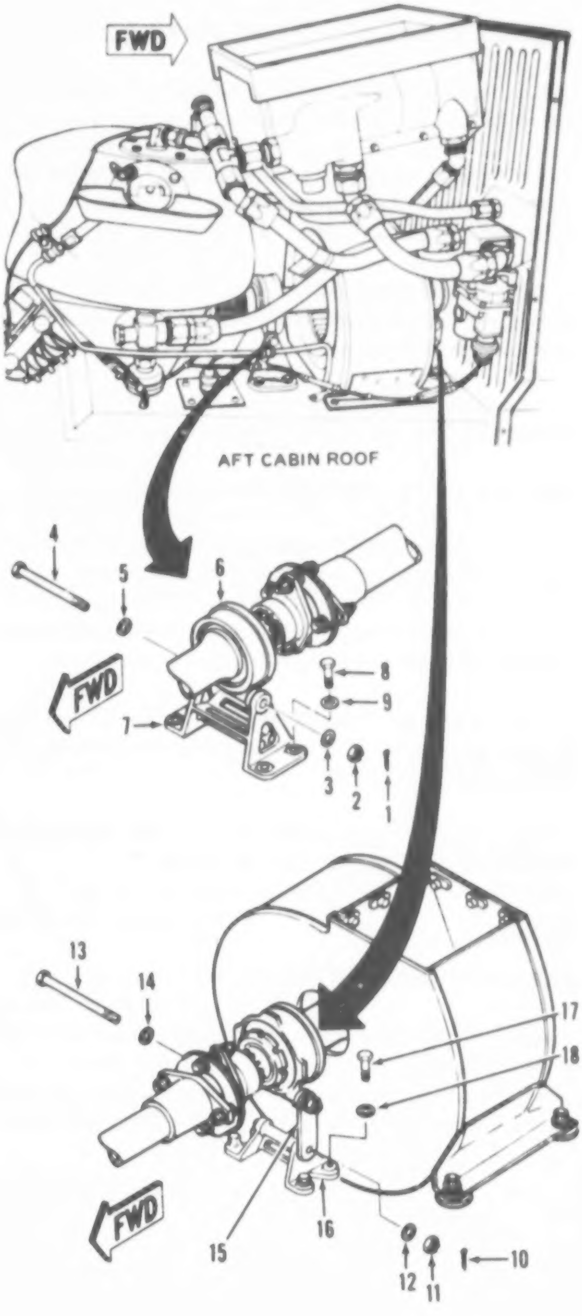
5. Cut lockwire and remove four bolts (17) and four washers (18) from forward bearing hanger bracket (16).

CAUTION

> Fan shaft must be supported to avoid damage to the disc packs.

6. Remove forward bearing hanger bracket (16) from aft cabin roof.

7. Inspect forward and aft bearing hanger brackets (16 and 7) (Task 6-6-15).



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6-6-14. REMOVE/INSTALL FAN SHAFT BEARING HANGER BRACKETS (FORWARD AND AFT) (CONT)

INSTALL FORWARD BEARING HANGER BRACKET

8. Install forward bearing hanger bracket on aft cabin roof with four washers (18) and four bolts (17).

9. Torque bolts (17) **50-70 INCH-POUNDS** and secure bolts (17) to forward bearing hanger bracket (16) with lockwire (D4).

10. Install links (15) on forward bearing hanger bracket (16) with washer (14), bolt (13), washer (12), and castellated nut (11).

11. Torque castellated nut (11) **50-70 INCH-POUNDS** and secure with cotter pin (10).

INSTALL AFT BEARING HANGER BRACKET

12. Install aft bearing hanger bracket on aft cabin roof with four washers (9) and four bolts (8).

13. Torque bolts (8) **50-70 INCH-POUNDS** and secure bolts (8) in pairs with lockwire (D4).

14. Install aft bearing hanger (6) on aft bearing hanger bracket (7) with washer (5), bolt (4), washer (3), and castellated nut (2).

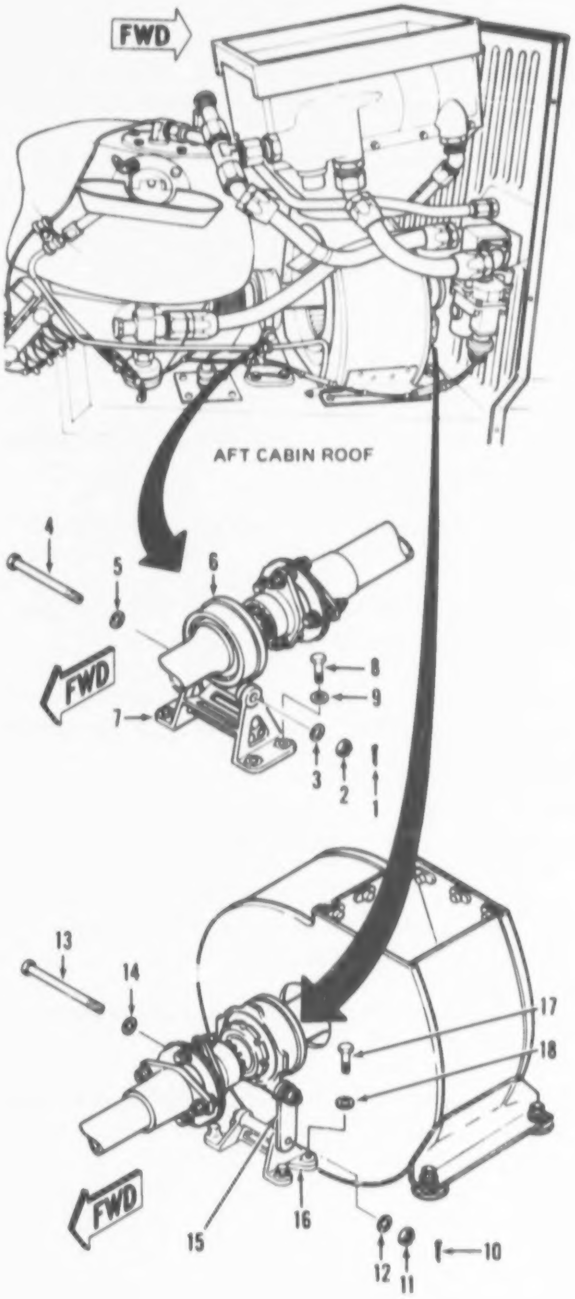
15. Torque castellated nut (2) **50-70 INCH-POUNDS** and secure with cotter pin (1).

INSPECT

FOLLOW-ON MAINTENANCE

Align tail rotor driveshaft and hanger bearings (Task 6-6-16).

Install aft fairing assembly (Task 2-1-28).



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6-6-15. CLEAN, INSPECT, AND REPAIR FAN SHAFT BEARING HANGER BRACKETS (FORWARD AND AFT)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Tool Set

Materials:

Chemical Conversion Coating (D12)
Drycleaning Solvent (D1)
Wiping Rags (D53)
Sandpaper (D11)
Crocus Cloth (D8)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0103
TM 55-1500-345-23

General Safety Instructions:

WARNING

Drycleaning solvent (D1) and chemical conversion coating (D12) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CLEAN

1. Clean bearing hanger brackets with a wiping rag (D53) dampened with drycleaning solvent (D1).

2. Dry bearing hanger bracket with a clean wiping rag (D53).

INSPECT

3. Fluorescent penetrant inspect bearing hanger brackets in accordance with TM 43-0103.

4. Inspect bearing hanger brackets to limits shown.

REPAIR

5. Repair damage to bearing hanger brackets using sandpaper (D11).

6. Blend repaired area into surrounding area with crocus cloth (D8).

7. Apply chemical conversion coating (D12) to bearing hanger brackets in accordance with TM 55-1500-345-23.

INSPECT

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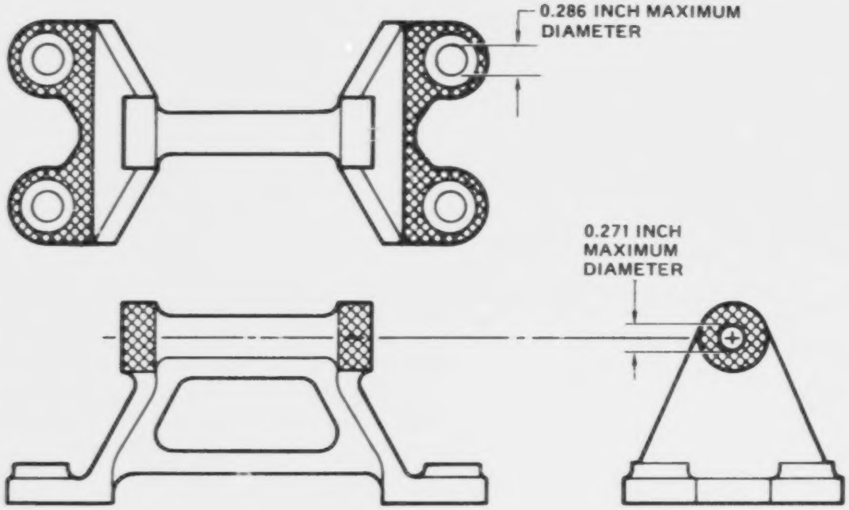
6-6-15. CLEAN, INSPECT, AND REPAIR FAN SHAFT BEARING HANGER BRACKETS (FORWARD AND AFT) (CONT)


0.286 INCH MAXIMUM DIAMETER
0.271 INCH MAXIMUM DIAMETER

SUPPORT BRACKET- FORWARD BEARING HANGER

	DAMAGE LOCATION SYMBOLS	
	▨	▭
TYPE OF DAMAGE	**MAXIMUM DAMAGE AND REPAIR DEPTH**	
MECHANICAL AND CORROSION	0.001 In. before and after repair	0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.	0.250 Sq. in.
NUMBER OF REPAIRS	Two per area	Two per area
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 40-50° For	0.500 In.

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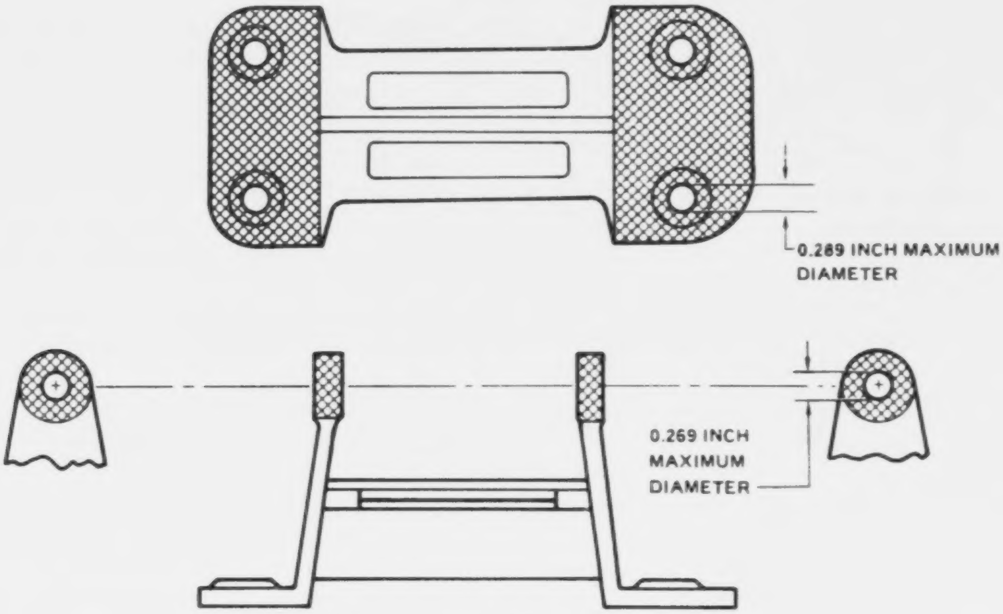
6-6-15. CLEAN, INSPECT, AND REPAIR FAN SHAFT BEARING HANGER BRACKETS (FORWARD AND AFT) (CONT)


0.289 INCH MAXIMUM DIAMETER
0.269 INCH MAXIMUM DIAMETER

AFT BEARING HANGER BRACKET

	DAMAGE LOCATION SYMBOLS		
	▨		☐
TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH		
MECHANICAL AND CORROSION	0.001 In. before and after repair		0.010 In. before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.100 Sq. in.		0.250 Sq. in.
NUMBER OF REPAIRS	Two per area		Two per area
EDGE CHAMFER TO REMOVE DAMAGE	0.030 In. x 40-50°	For	0.500 In.

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END OF TASK

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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION

This task covers: Alignment of Tail Rotor Driveshaft and Bearing Hangers and Inspection of Couplings (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 0–30 Inch-Pounds
Torque Wrench, 30–150 Inch-Pounds
Torque Wrench, 100–750 Inch-Pounds
Gunners Quadrant, Part of Boresight Device (B108)
Plate Set Assembly (B126)
Alignment Tool Set (B128)
Tripod Jack
Dial Indicator (B268)
Sleeve (B269)

Parts:

Cotter Pins
Shims

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)

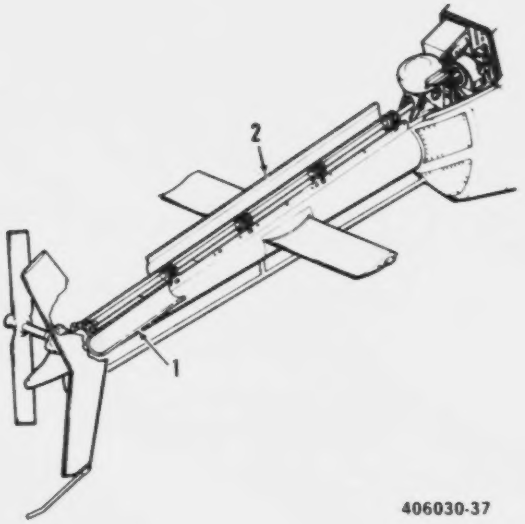
1. Place maintenance platform on right side of helicopter.

WARNING

> Do not attempt to unlatch aft cover while tail rotor is in operation. Physical damage could result.

2. Open or remove (as applicable) aft tail rotor driveshaft cover (1).

3. Open forward tail rotor driveshaft cover (2).



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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

ALIGNMENT

NOTE

Alignment of entire tail rotor driveshaft is to be started from tail rotor gearbox, working forward. Alignment of a section or sections of tail rotor driveshaft is to be started with most aft shaft or bearing hanger replaced, working forward.

4. Install tail rotor driveshaft and bearing hanger assembly. Do not tighten nuts at this time (Task 6-6-7).

5. Remove retaining ring (3) from bearing hanger (4). Rest retaining ring (3) on adapter coupling (5).

6. Install two halves of plate set assembly (6) over bearing hanger (4). Ensure that two clips (7) face aft.

7. Establish firm contact between bearing hanger (4) and plate set assembly (6) before tightening two shoulder screws (8).

8. Evenly torque two shoulder screws (8) **30-50 INCH-POUNDS**.

9. Run two swivel screw clamps (9) in against bearing hanger (4).

10. Evenly torque two swivel screw clamps (9) **20 INCH-POUNDS**.

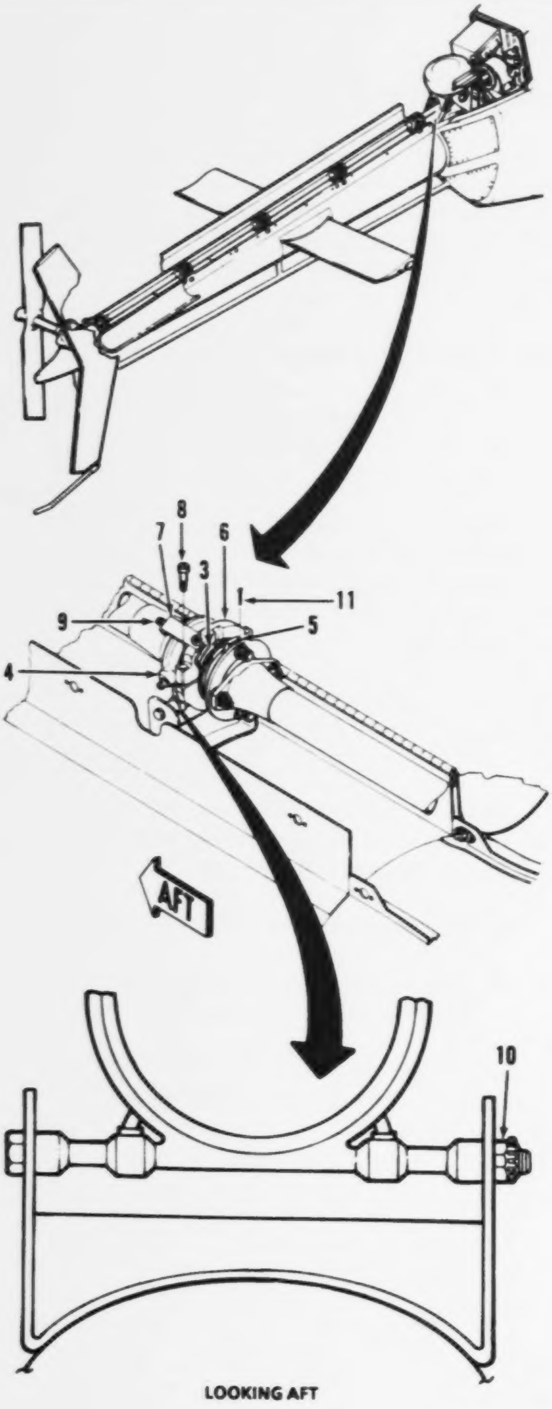
11. Torque nut (10) **50-70 INCH-POUNDS**.

12. Secure nut (10) with cotter pin (11).

13. Loosen two swivel screw clamps (9) and back off enough to clear flange of bearing hanger (4).

14. Remove plate set assembly (6) from bearing hanger (4).

15. Install retaining ring (3) in groove of bearing hanger (4) to secure bearing.



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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

INSPECT

COUPLING INSPECTION

NOTE

Personnel not performing coupling inspection are to be kept off of helicopter. Movement affects measurements to be taken.

16. Inspect coupling angles as follows:

WARNING

Ensure that helicopter is placed in a relative wind free area prior to jacking. Sustained or sudden wind gusts may topple helicopter from jacks. Injury or death to personnel could result.

CAUTION

Observe the following cautions while helicopter is on jacks or damage to helicopter could result.

- Do not climb on or enter helicopter.
- Use caution to avoid bumping or otherwise disturbing helicopter.
- Rope off area around helicopter and display signs to warn: THIS HELICOPTER ON JACKS.

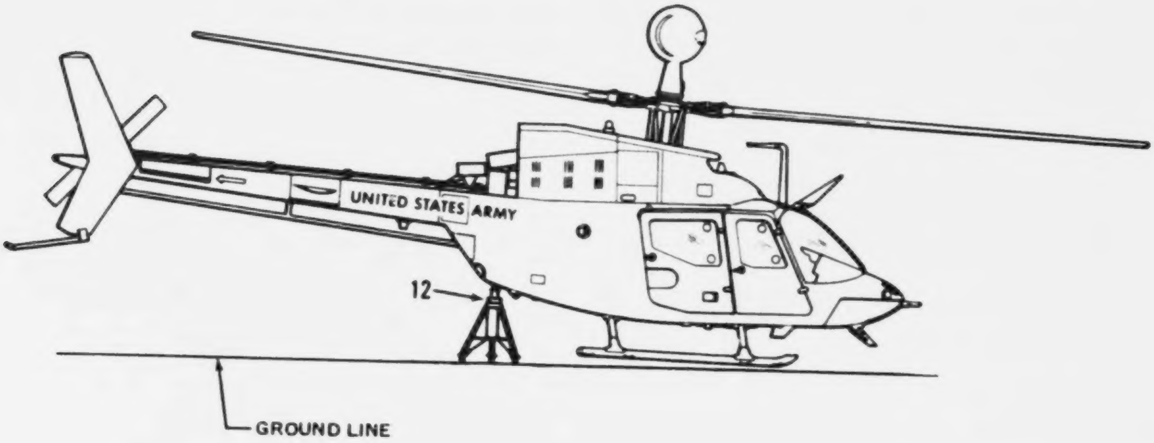
GO TO NEXT PAGE

6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

WARNING

Do not leave helicopter unattended when using jacks without positive locks.

a. Place a tripod jack (12) under aft fuselage jack point. Jack helicopter enough to support weight and prevent rocking during coupling inspection.



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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

b. Use a gunners quadrant (B108) to measure angle off horizontal plane of driveshaft assembly (13) and bearing hanger (4). The difference in angles between two adjacent driveshaft assemblies shall not exceed 12.60 milliradians (mils) (0.71°). Record angles measured in milliradians.

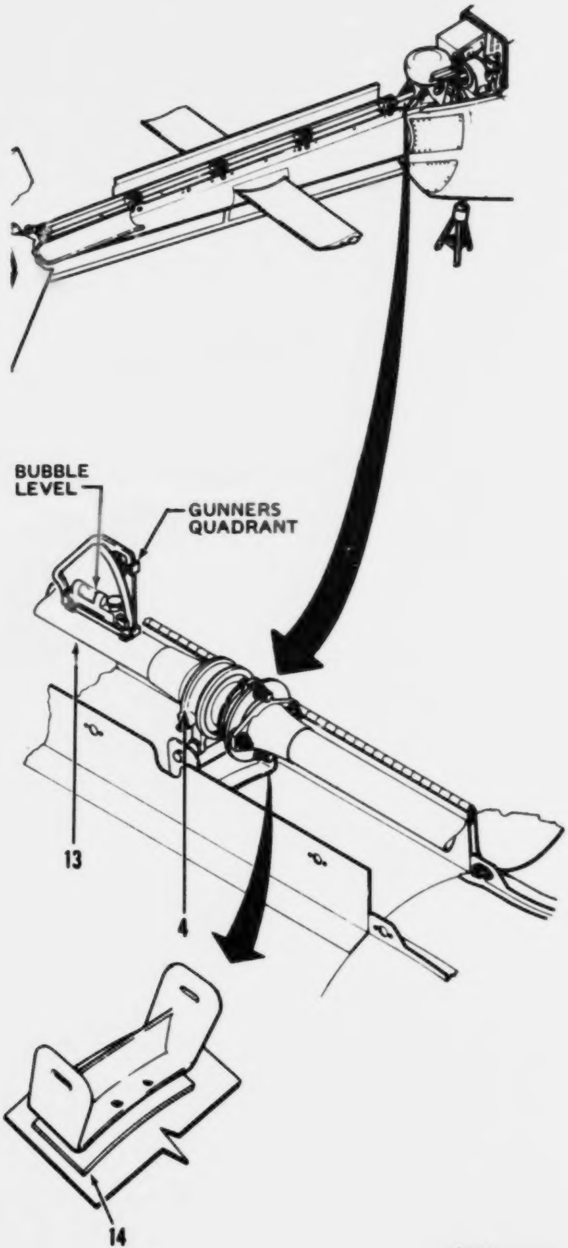
c. If difference in reading between two adjacent driveshaft assemblies (13) exceeds limits, bearing hanger support shims (14) shall be removed or added to acquire proper milliradian difference.

17. To gain proper difference in angles, measured in mils, between two adjacent driveshaft assemblies (13), proceed as follows:

NOTE

A typical procedure is described. Procedure for any other driveshaft assemblies except for fan shaft is similar.

a. Remove driveshaft assemblies (13) and bearing hanger (4) (Task 6-6-7).



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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

b. Remove support (15) from shim (14) (Task 2-2-10).

c. Remove or add shims (14) as needed to correct difference in readings between two adjacent driveshaft assemblies (13).

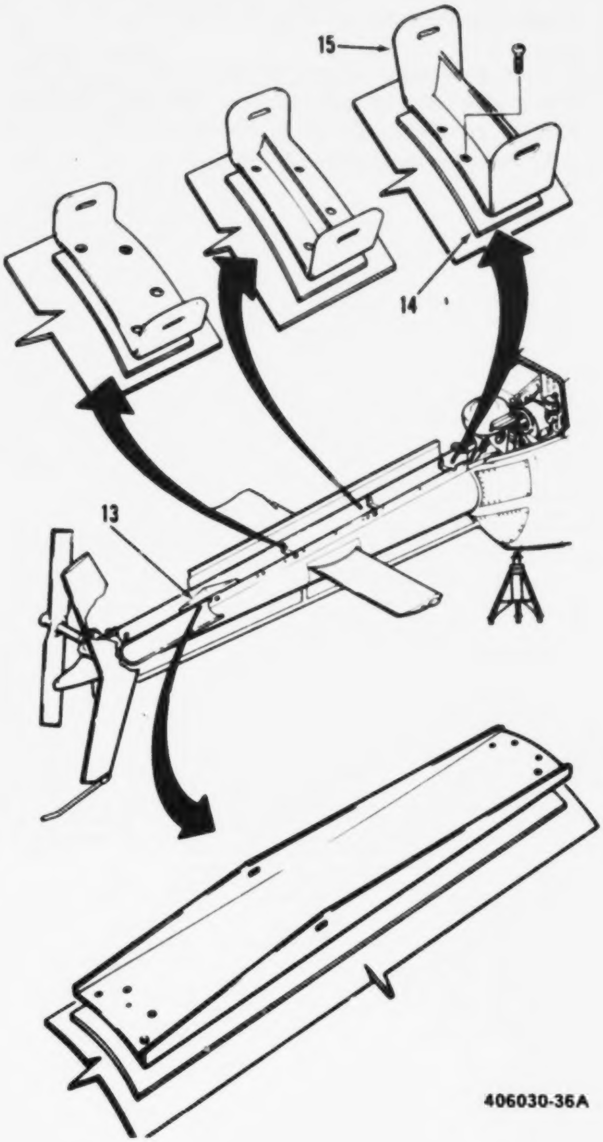
d. Install support (15) (Task 2-2-10).

e. Install bearing hanger (4) and driveshafts (13).

f. Recheck difference in readings between two adjacent driveshaft assemblies (13). Use gunners quadrant (B108). If limit is exceeded, repeat steps a. through e.

NOTE

The fan shaft cannot be checked with the gunners quadrant. Therefore, the alignment tool set (B128) will be used to check the angle of the couplings for the fan shaft.



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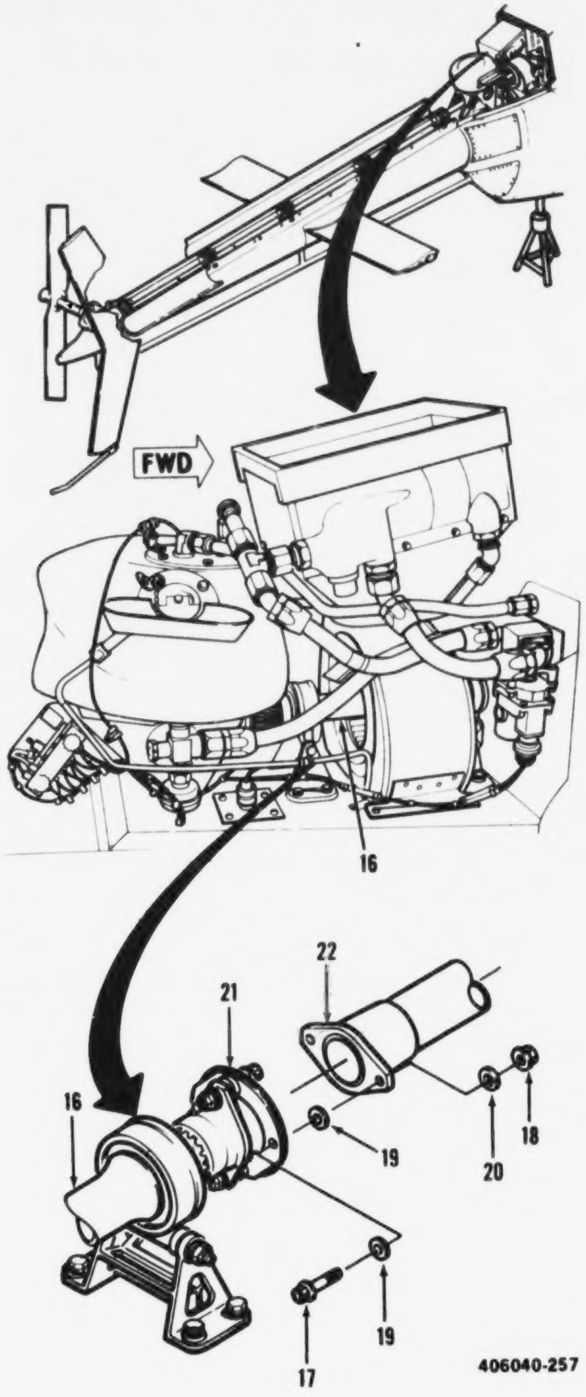
6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

18. Use alignment tool set (B128) to inspect coupling angles on fan shaft (16) as follows:

a. Remove one bolt (17), one nut (18), and associated washers (19 and 20) from disc pack (21), and adapter coupling (22) located at aft end of fan shaft (16). Save hardware for installation.



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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

b. Install bolt (23) with two washers (19) and washer (20) through bolt hole in disc pack (21) and adapter coupling (22).

c. Ensure that short end of bolt (23) is facing forward. Also, ensure that beveled edges of washers (19) are against disc pack (21). Secure bolt (23) with nut (18). Thread post (24) into bolt (23).

d. Place dial indicator holding sleeve (25)(B269) on post (24).

e. Remove threaded tip (26) from stem of dial indicator (27)(B268). Install dial indicator (27) on dial indicator holding sleeve (25).

f. Position dial indicator (27) with stem at 90 degrees to centerline of fan shaft (16). Also, dial indicator (27) shall contact splined adapter (28) 0.100 inch from edge.

CAUTION

Ensure main rotor blades and tail rotor blades are clear before rotating fan shaft. Damage to blades may occur if they strike an object.

g. Set (preload) travel of dial indicator (27) so that it can sweep ±0.04 inch without bottoming.

h. Check for clearance to rotate tail rotor driveshaft and dial indicator (27) 360 degrees without contacting airframe or other obstruction. If value is not within limits, take no remedial action until coupling at opposite end of fan shaft (16) is checked.

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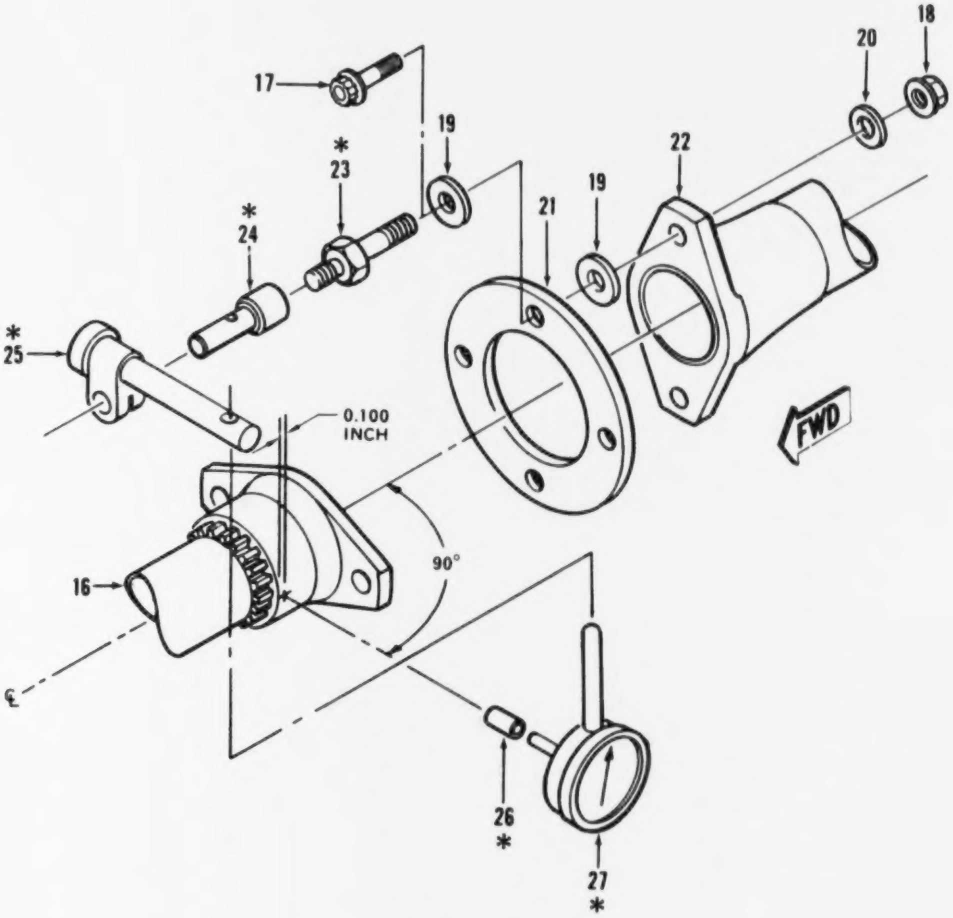
6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)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22
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16
℄
26 *
27 *

* PART OF ALIGNMENT TOOL SET (B128)

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CAUTION

Exercise care in reading dial indicator. Ensure that stem is always more depressed (clockwise needle motion at top of total indicator reading (T.I.R.) sweep than at bottom. This will avoid reversing the curvature of driveshaft. With angles as small as 0.6 degrees, the eye cannot readily detect whether the angle is up or down.

i. Use an inspection mirror to read dial indicator (27). Slowly rotate fan shaft (16) until indicator needle stops. Record reading. Continued rotation of shaft (16) will cause needle to move in opposite direction. Rotate shaft until needle stops. Record reading. Add the two readings to obtain total indicated reading (TIR). Readings should fall within limits as follows:

Maximum total indicated reading 0.035 inch (0.71°)
Minimum total indicated reading 0.024 inch (0.49°)

j. Remove dial indicator (27), threaded tip (26), dial indicator holding sleeve (25), post (24), and bolt (23) from aft disc pack (21) and adapter coupling (22). Ensure that two washers (19) and washer (20) are in proper position. Install bolt (17) and nut (18).

k. Torque nut (18) **150-180 INCH-POUNDS**.

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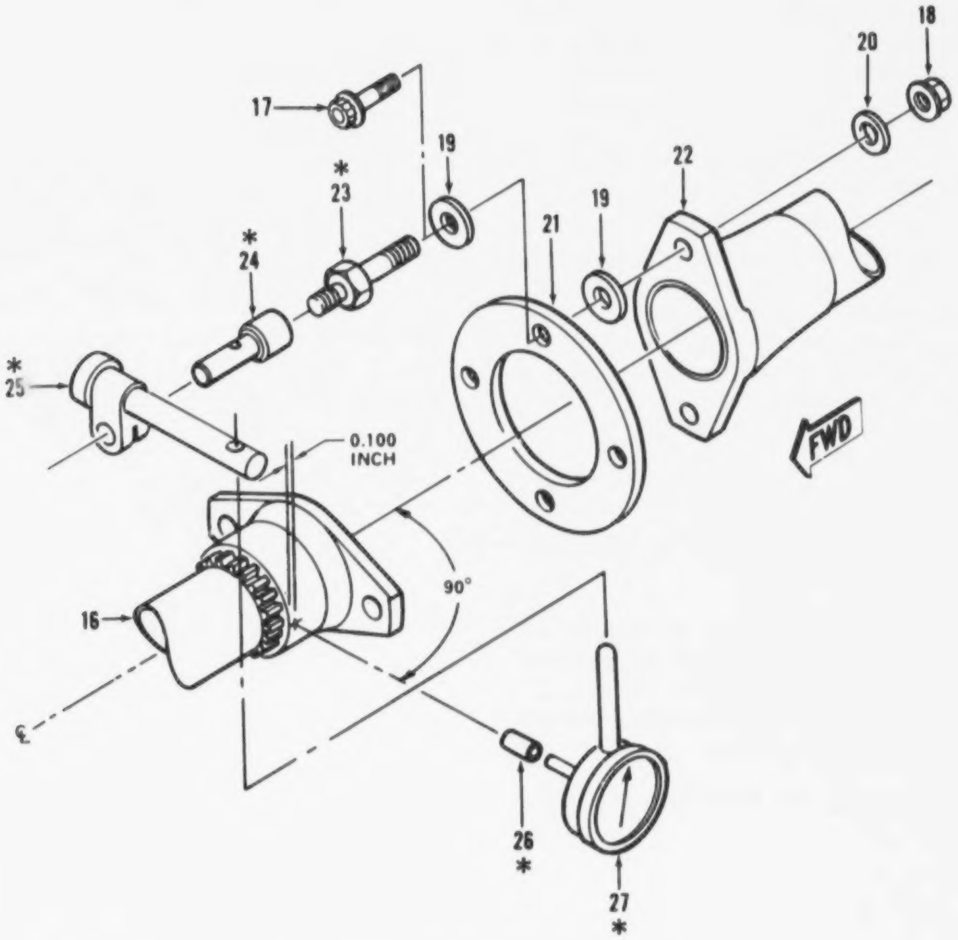
6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)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* PART OF ALIGNMENT TOOL SET (B128)

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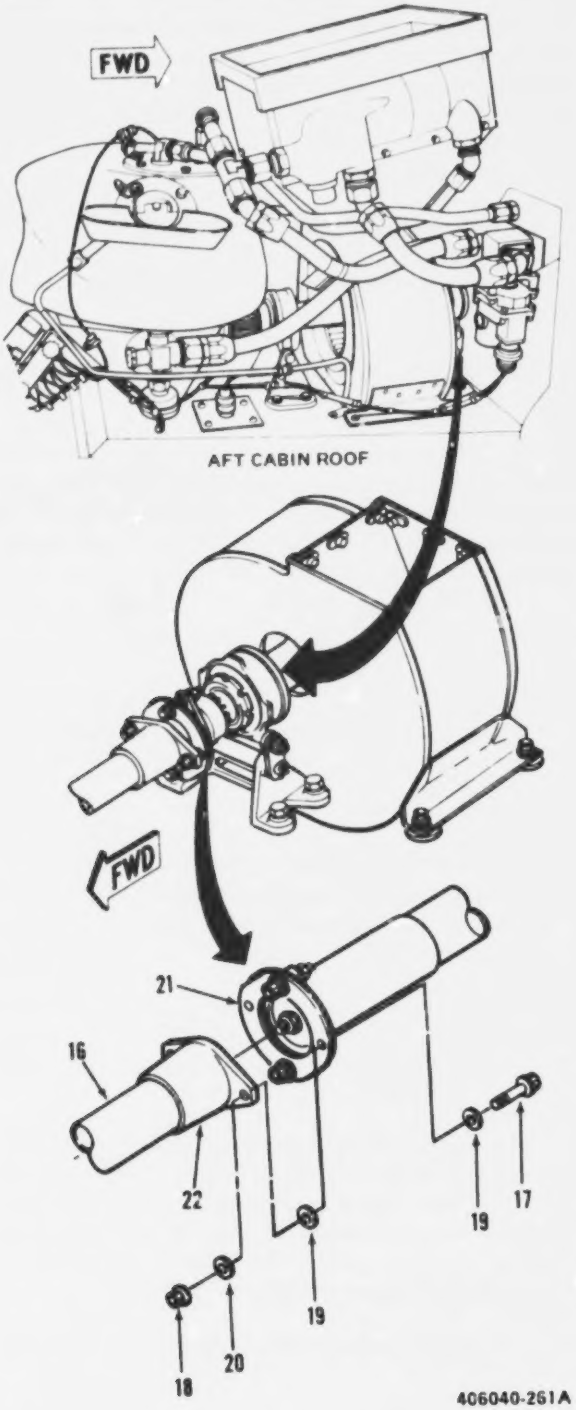
6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

l. Remove one bolt (17), one nut (18), and associated washers (19 and 20) from disc pack (21) and adapter coupling (22) of forward end of fan shaft (16). Save hardware for installation.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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

m. Install bolt (23) with two washers (19) and washer (20) through bolt hole in disc pack (21) and adapter coupling (22). Ensure that short end of bolt (23) is facing aft. Also, ensure that beveled edges of washers (19) are against disc pack (21). Secure bolt (23) with nut (18).

n. Thread post (24) into bolt (23).

o. Place dial indicator holding sleeve (25) on post (24).

p. Install dial indicator (27) on dial indicator holding sleeve (25).

q. Position dial indicator (27) with step at 90 degrees to centerline of fan shaft (16). Also, dial indicator (27) shall contact coupling adapter (29) 0.76 inch from edge. Point of contact is on tapered portion of coupling adapter (29).

CAUTION

Ensure main rotor blades and tail rotor blades are clear before rotating fan shaft. Damage to blades may occur if they strike an object.

r. Use an inspection mirror to read dial indicator (27). Slowly rotate fan shaft (16) through 360 degrees and record total indicated reading. Readings should fall within limits as follows:

Maximum total indicated reading 0.039 inch (0.80°)
Minimum total indicated reading 0.028 inch (0.58°)

s. If both adapter couplings are within limits, remove dial indicator (27), dial indicator holding sleeve (25), post (24), and bolt (23) from forward disc pack (21) and adapter coupling (22). Ensure that two washers (19) and washer (20) are in proper position. Install bolt (17) and nut (18).

t. Torque nut (18) **150-180 INCH-POUNDS**.

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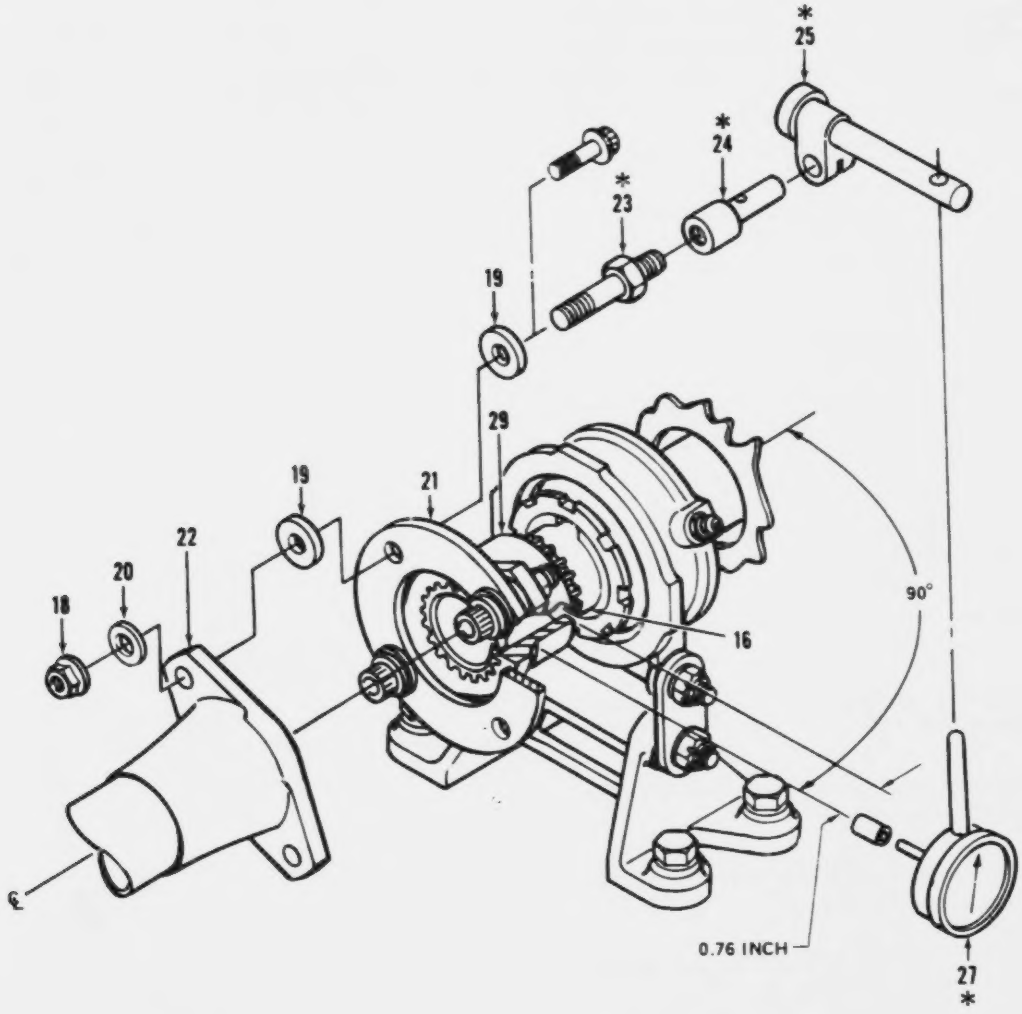
6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)


*
25
*
24
*
23
19
29
19
21
22
20
18
90°
16
℄
0.76 INCH
27
*

✱ PART OF ALIGNMENT TOOL SET (B128)

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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

u. If measurement is less than minimum limit, angle between fan shaft and next shaft segment is too flat. If measurement is greater than maximum limit, angle is too great. If angle is too flat, remove shims from hanger mount, or add shims under hanger mount on opposite end.

CAUTION

After shimming procedure is completed, ensure fan impeller does not rub on impeller housing. Reshimming of housing may be necessary.

NOTE

Shims may have to be adjusted under both hanger mounts to maintain limits on both ends of shaft.

(1) Remove hanger bracket (30) and/or hanger bracket (31) (Task 6-6-14).

(2) Remove from, or add to, thickness of shims (32).

(3) Install hanger bracket (30) and/or hanger bracket (31) (Task 6-6-14).

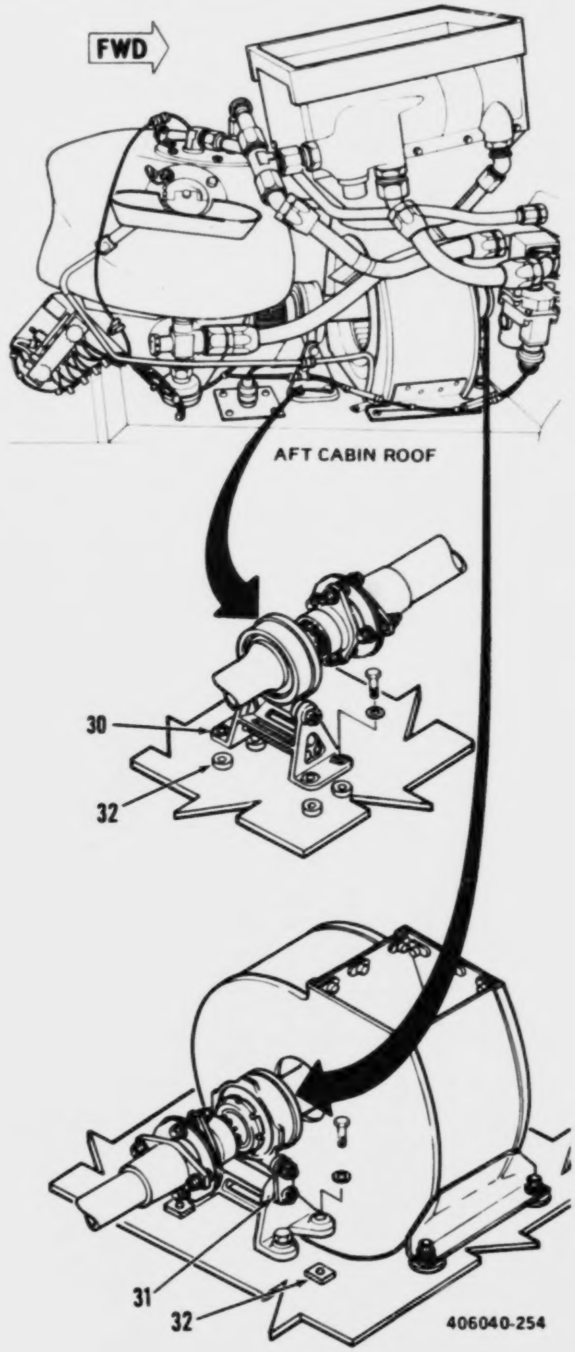
(4) Repeat procedure for inspection of coupling angles (steps a. through r.).

(5) If both adapter couplings are within limits, remove alignment tool set (step s.).

(6) If both adapter couplings are not within limits, adjust shim thickness (step u.).

(7) Continue repeating procedure for inspection of coupling angles until both adapter couplings are within limits.

INSPECT



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6-6-16. TAIL ROTOR DRIVESHAFT AND BEARING HANGER ALIGNMENT AND COUPLING INSPECTION (CONT)

19. Lower helicopter and remove tripod jack (12).

20. Close tail rotor driveshaft cover (2).

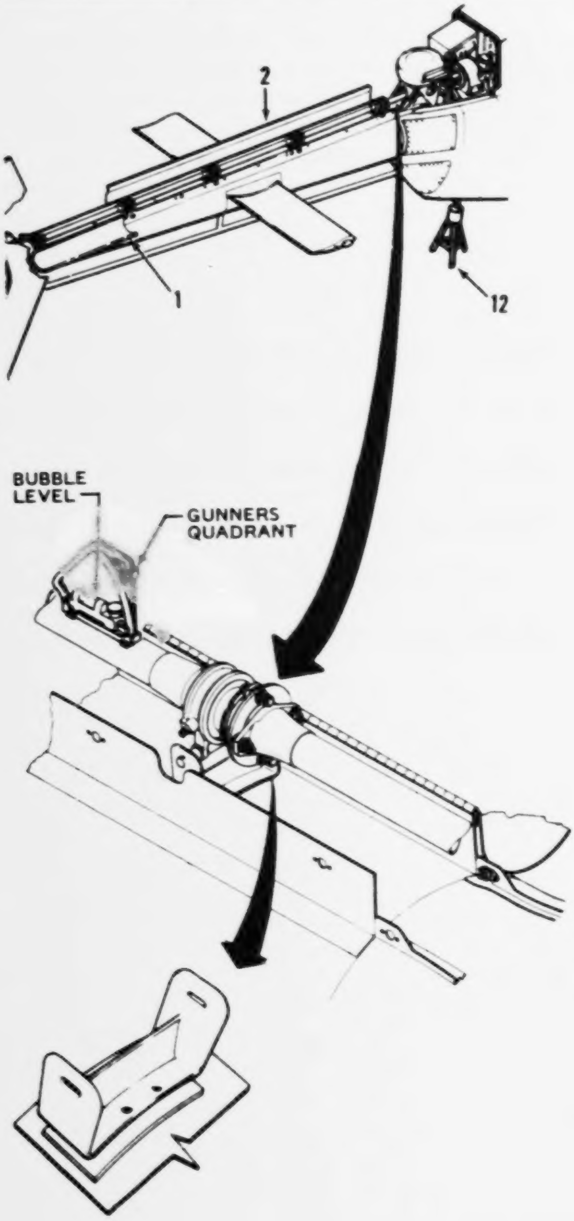
21. Close or install (as applicable) tail rotor driveshaft cover (1).

22. Remove maintenance platform.

FOLLOW-ON MAINTENANCE

Install aft fairing assembly (Task 2-1-28).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

Section VII. TAIL ROTOR GEARBOX

This section covers maintenance procedures on the tail rotor gearbox. These maintenance procedures include removal and installation of tail rotor gearbox, input pinion seal, output shaft seal, temperature thermoswitch, and repair of breather.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Tail Rotor Gearbox	6-7-1	6-291
Clean, Inspect, and Repair Tail Rotor Gearbox	6-7-2	6-296
Repair Tail Rotor Gearbox Breather	6-7-3	6-299
Remove/Install Tail Rotor Gearbox Oil Temperature Thermoswitch	6-7-4	6-300
Remove/Install Tail Rotor Gearbox Input Seal (AVIM)	6-7-5	6-301
Remove/Install Tail Rotor Gearbox Output Shaft Seal (AVIM)	6-7-6	6-309

6-7-1. REMOVE/INSTALL TAIL ROTOR GEARBOX

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench, 30-150 Inch-Pounds
Work Aid (H-199)

Materials:

Lubricating Oil (D2 or D3)
Rubber Gloves (D119)
Dissimilar Metal Separation Tape (D152)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1500-204-25/1
TM 55-1520-248-MTF

Equipment Condition:

Tail Rotor Gearbox Drained (Task 1-4-7)
Tail Rotor Assembly Removed (Task 5-4-11)
Taillight Support Removed (Task 2-2-23)
Fin Assembly Removed (Task 2-2-19)
Coupling Disc Pack Removed (Typical) (Task 6-6-5)

GO TO NEXT PAGE

6-7-1. REMOVE/INSTALL TAIL ROTOR GEARBOX (CONT)

REMOVE

1. Remove screw (1), washer (2), and spacer (3) securing clamp (4) to tail rotor gearbox (5).

2. Loosen nut (6) and remove tube assembly (7).

3. Disconnect rod end (8) from lever assembly (9) by removing cotter pin (10), nut (11), two washers (12), and bolt (13).

4. Remove 12 screws (14) and 12 washers (15) securing access panel (16) to tailboom (17).

5. Remove access panel (16).

6. Remove cotter pin (18), nut (19), two washers (20), and bolt (21) securing bellcrank (22) to support (23).

7. Disconnect thermoswitch electrical connector (24).

8. Disconnect chip detector electrical connector (25).

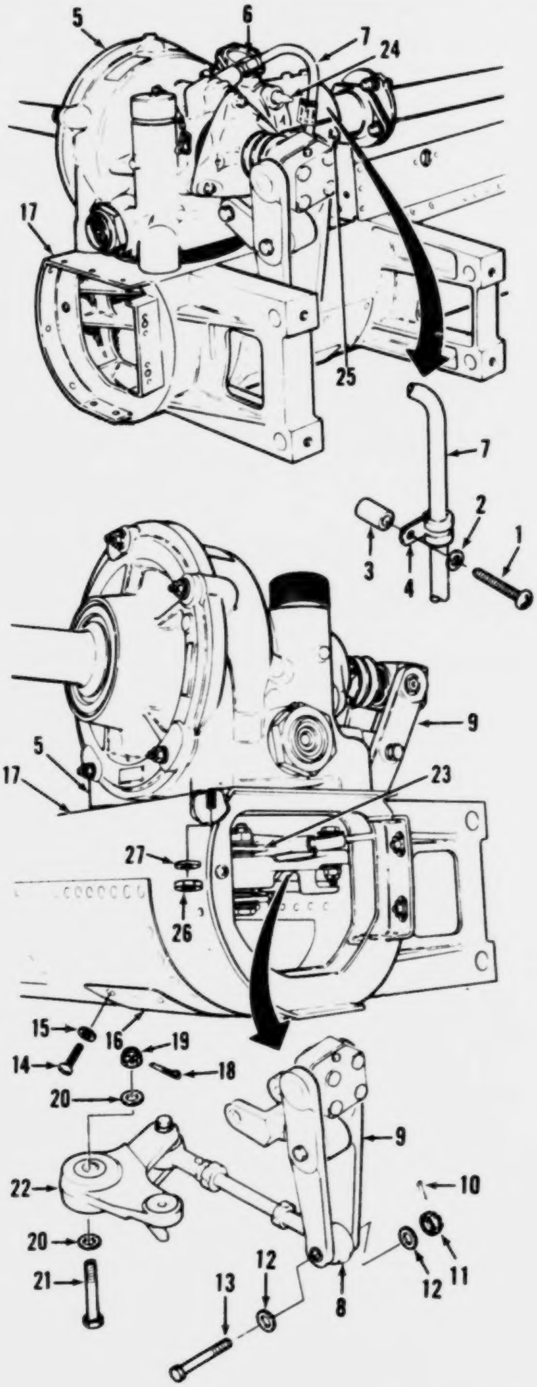
9. Secure gearbox wire connectors, brackets, and clamps to the gearbox support assembly using tape or safety wire. Do not kink wire.

10. Remove four nuts (26) and four washers (27) using work aid (H-199).

11. Remove tail rotor gearbox (5) from tailboom (17).

12. Remove tail rotor control housing (Task 5-5-18).

13. Remove tail rotor control tube from tail rotor output shaft by hand. (Task 5-5-13)



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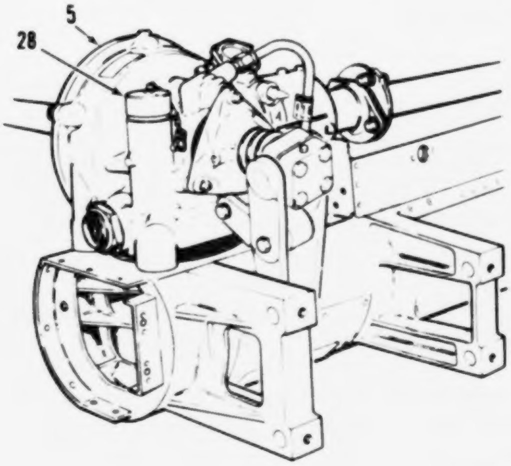
6-7-1 REMOVE/INSTALL TAIL ROTOR GEARBOX (CONT)



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PRESERVATION AND STORAGE

WARNING

Lubricating oil (D2) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use rubber gloves (D119). Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

14. Open filler cap (28), turn tail rotor gearbox (5) upside down, and drain oil.

15. Preserve tail rotor gearbox (5) in accordance with TM 55-1500-204-25/1.

16. Remove new tail rotor gearbox (5) from container and set new tail rotor gearbox (5) aside.

17. Place old tail rotor gearbox (5) into container and seal container.

GO TO NEXT PAGE

6-7-1. REMOVE/INSTALL TAIL ROTOR GEARBOX (CONT)

PREPARATION

18. Open filler cap (28). Turn tail rotor gearbox (5) upside down and drain preservative oil.

19. Pour one quart of lubricating oil (D2 or D3) into tail rotor gearbox (5). Shake tail rotor gearbox vigorously for 15 seconds and drain lubricating oil.

INSTALLATION

20. Install tail rotor control housing and tail rotor control tube. (Task 5-5-15 and Task 5-5-18).

21. Install tail rotor gearbox (5) on tailboom (17) and secure with four washers (27) and four nuts (26).

22. Torque four nuts (26) **100-140 INCH-POUNDS** using work aid (H-199).

23. Secure bellcrank (22) to support (23) with bolt (21), two washers (20), and nut (19).

24. Torque nut (19) **60-80 INCH-POUNDS**. Install cotter pin (18).

25. Connect rod end (8) to lever assembly (9) with bolt (13), two washers (12), and nut (11).

26. Torque nut (11) **60-80 INCH-POUNDS**. Install cotter pin (10).

27. Connect tube assembly (7) to tail rotor gearbox (5) with nut (6).

28. Secure clamp (4) to tail rotor gearbox (5) with spacer (3), washer (2), and screw (1).

29. Install thermoswitch electrical connector (24).

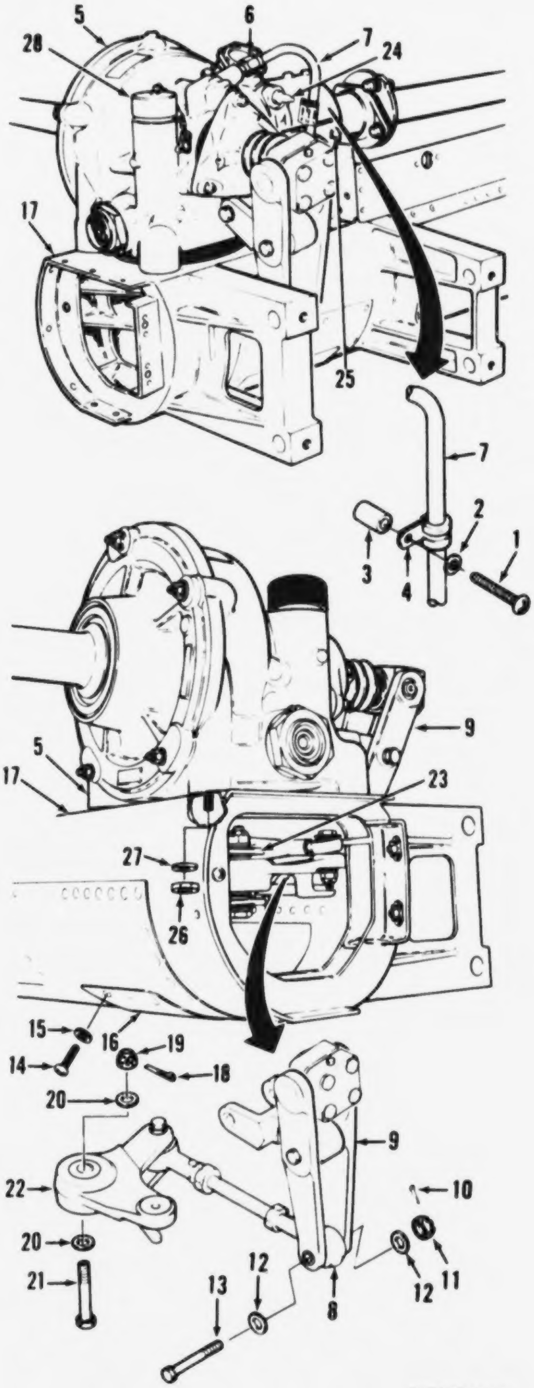
30. Install chip detector electrical connector (25).

INSPECT

31. Install access panel (16) into tailboom and secure with 12 washers (15) and 12 screws (14).

32. Service tail rotor gearbox (Task 1-4-7).

INSPECT



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6-7-1. REMOVE/INSTALL TAIL ROTOR GEARBOX (CONT)

FOLLOW-ON MAINTENANCE

Install tail rotor assembly (Task 5-4-16).

Install fin assembly (Task 2-2-19).

Install taillight support (Task 2-2-23).

Install coupling disc pack (Task 6-6-5).

Pilot perform MTF (TM 55-1520-248-MTF).

END OF TASK

6-7-2. CLEAN, INSPECT, AND REPAIR TAIL ROTOR GEARBOX

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Dial Indicator
Nonmetallic Brush
Torque Wrench, 100-750 Inch-Pounds

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rag (D53)
Sandpaper, 400-grit (D11)
Polyamide Epoxy Primer (D13)
Abrasive Pads (D89)
Lockwire (D4)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

WARNING

Drycleaning solvent (D1) and polyamide epoxy primer (D13) are flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

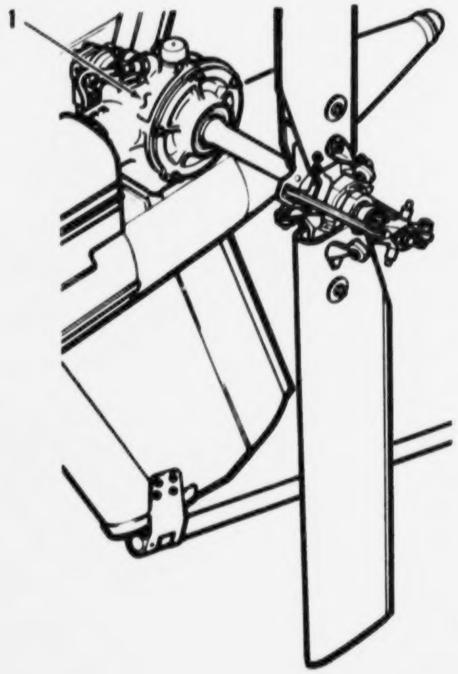
CLEAN

1. Clean tail rotor gearbox (1) with wiping rag (D53) and drycleaning solvent (D1). Use nonmetallic brush for stubborn deposits.

2. Dry tail rotor gearbox (1) with a clean wiping rag (D53).

INSPECT

3. Inspect tail rotor gearbox (1) for leaking seals, cracks, and security. No cracks or leaks allowed.



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6-7-2. CLEAN, INSPECT, AND REPAIR TAIL ROTOR GEARBOX (CONT)

4. Inspect tail rotor gearbox (1) for metal contamination (Task 6-1-4).

5. Inspect filler cap (2) for proper locking and security.

6. Inspect tail rotor gearbox oil for evidence of water. When water is present the oil has a dirty milky appearance. If water is present or suspected, drain and flush tail rotor gearbox (1) until water contamination is removed, then service tail rotor gearbox (1) (Task 1-4-9). In the event contamination cannot be cleared, replace tail rotor gearbox (1) (Task 6-7-1). Condensation on the inside of the sight glass is acceptable, providing that the oil does not have a dirty milky appearance.

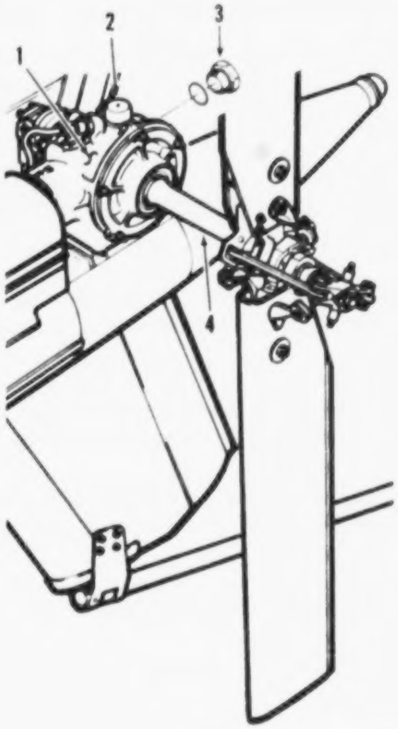
7. Inspect sight glass (3) for security, cracks, crazing, or discoloration. If any of these conditions are found, replace sight glass (3).

8. Inspect the tail rotor gearbox shaft (4) for excessive movement as follows:

    a. Measure by installing a dial indicator one inch outboard of gearbox output seal. Total radial movement of the shaft (4) when moved up and down shall not exceed 0.003 inches at this point. The movement should be performed by applying thumb and index finger to the outboard end of shaft and enough up and down pressure to check the actual looseness. Movement in excess of 0.003 warrants replacement of the tail rotor gearbox (1).

    b. Axial movement of the tail rotor gearbox (1) output shaft (4) is not permitted. Replace the tail rotor gearbox (1) if there is any axial movement of the output shaft.

9. Inspect tail rotor gearbox for leakage. Maximum allowable leakage is 4 drops per hour from the input seal or 4 drops per minute from all sources of tail rotor gearbox.



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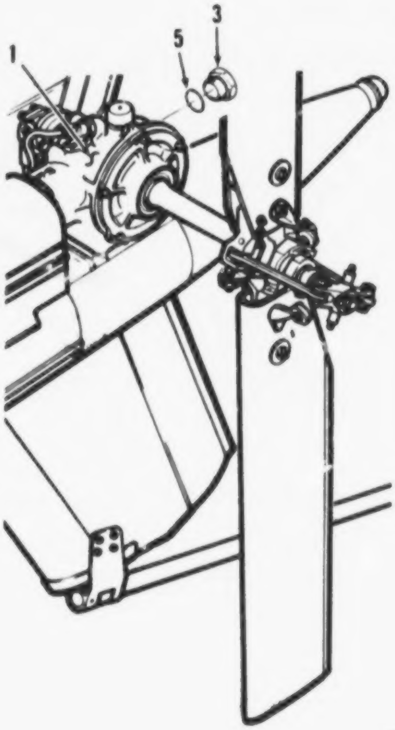
6-7-2. CLEAN, INSPECT, AND REPAIR TAIL ROTOR GEARBOX (CONT)

REPAIR



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10. Replace damaged or discolored sight glass(3) as follows:

a. Remove lockwire and remove sight glass (3) and packing (5).

b. Install new sight glass (3) and packing (5). Torque sight glass (5) **250-400 INCH-POUNDS**. Secure with lockwire (D4).

11. Remove corrosion from tail rotor gearbox (1) with abrasive pads (D89) and drycleaning solvent (D1).

12. Remove scratches and nicks on tail rotor gearbox (1) with 400-grit sandpaper (D11).

13. Remove sanding residue with wiping rag (D53) moistened with drycleaning solvent (D1).

14. Touch up repaired areas of tail rotor gearbox (1) case with polyamide epoxy primer (D13).

15. Replace cracked or leaking tail rotor gearbox (1) (Task 6-7-1).

END OF TASK

6-7-3. REPAIR TAIL ROTOR GEARBOX BREATHER

This task covers: Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench, 30-150 Inch-Pounds

Parts:

Packing

Materials:

Lubricating Oil (D2 or D3)
Drycleaning Solvent (D1)
Lockwire (D4)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

REMOVE

1. Disconnect tube (1) from breather (2).

2. Cut lockwire and remove breather (2) and packing (3). Discard packing.

CLEAN

WARNING

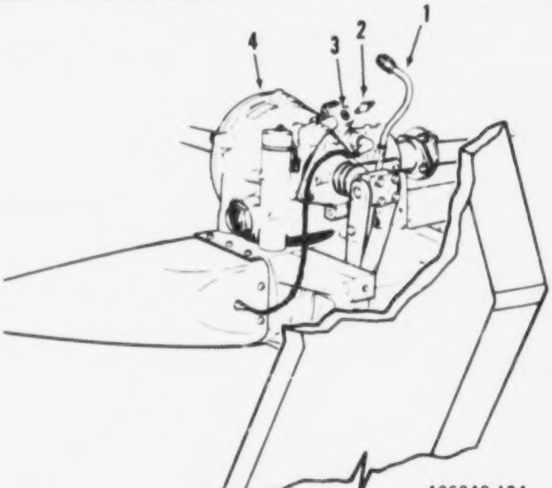
Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

3. Wash breather (2) with drycleaning solvent (D1). Air dry.

INSTALL

WARNING

Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.



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4. Coat packing with oil (D2 or D3).

5. Install packing (3) on breather (2).

6. Install breather (2) in port on tail rotor gearbox (4).

7. Torque breather (2) **75-125 INCH-POUNDS**.

8. Secure breather (2) to tang on tail rotor gearbox (4) with lockwire (D4).

9. Connect tube (1) to breather (2).

INSPECT

END OF TASK

6-7-4. REMOVE/INSTALL TAIL ROTOR GEARBOX OIL TEMPERATURE THERMOSWITCH

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench, 0-30 Inch-Pounds
Crowfoot Attachment, 1/2 Inch

Parts:

Packing

Materials:

Lockwire (D4)
Lubricating Oil (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

REMOVE

1. Move nipple (1) back to expose nut (2).

2. Remove nut (2) to disconnect electrical cable (3).

3. Remove thermoswitch (4) and packing (5). Discard packing.

INSTALL

WARNING

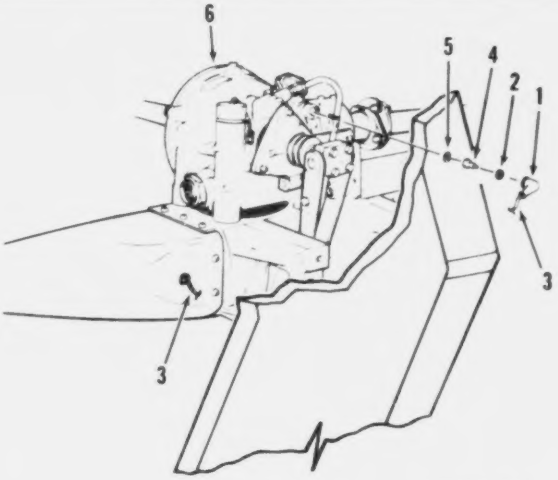
Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

4. Coat packing (5) with oil (D2 or D3).

5. Install packing (5) on thermoswitch (4).

6. Install thermoswitch in port in gearbox (6).

7. Torque thermoswitch (4) **15-25 INCH-POUNDS**.



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8. Secure thermoswitch (4) with lockwire (D4).

9. Connect electrical cable (3) to thermoswitch (4) with nut (2). Torque nut (2) not more than **6 INCH-POUNDS**.

10. Install nipple (1) over nut (2).

INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Powertrain Repairer Tool Kit
Socket Wrench Extension, 1/2 Inch Square Drive, Six Inches Long
Socket Wrench Handle, 1/2 Inch Square Drive (2)
Torque Wrench, 30-200 Foot-Pounds (B71)
Retaining Ring Pliers
Plastic Scraper (Work Aid)
Support Fixture (B131)
Jackscrew Set (B94)
Input Adapter Spanner Wrench (B127)
Input Seal Driver (B130)
Arbor Press
Vise
Wrench, Spanner (B270)

Parts:

Packing (3)

Materials:

Aliphatic Naphtha (D7)
Lockwire (D4)
Sealing Compound (D20)
Sealant (D29)
Lubricating Oil (D2 or D3)
Wiping Rag (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
68D Aircraft Powertrain Repairer

GO TO NEXT PAGE

6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM) (CONT)

PREPARE

1. Install tail rotor gearbox (1) in support fixture (B131) with four washers and nuts.

2. Mount support fixture in vise.

REMOVE

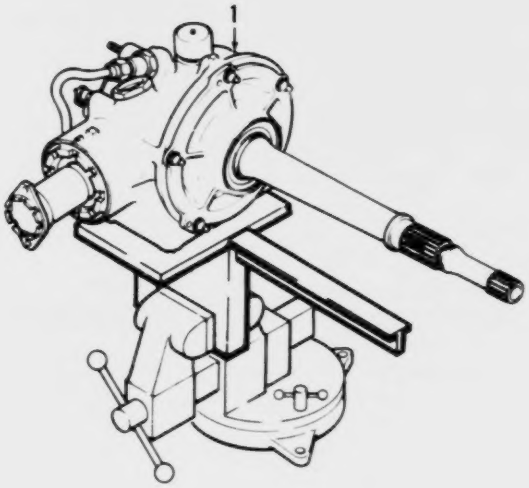
3. Remove retaining ring (2).

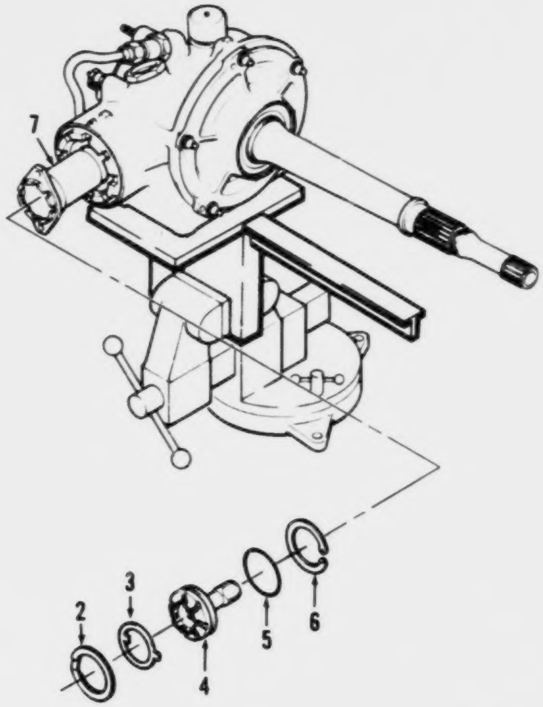
4. Remove lockring (3).

5. Remove plug (4) using jackscrew (B94).

6. Remove packing (5) from plug (4) and discard.

7. Remove retaining ring (6) from groove inside adapter (7).





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6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM) (CONT)

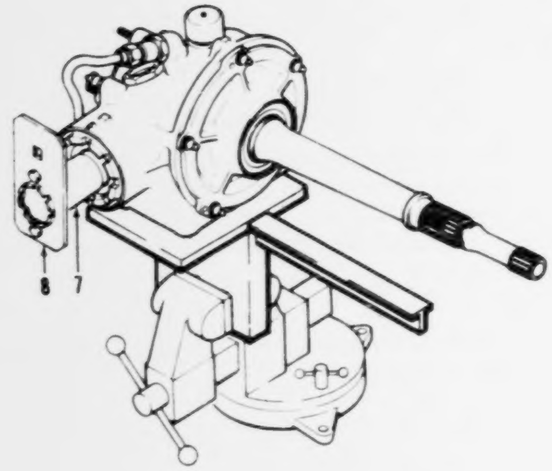
8. Install spanner (B127) (8) on adapter (7), using bolts, washers, and nuts provided with spanner (8).

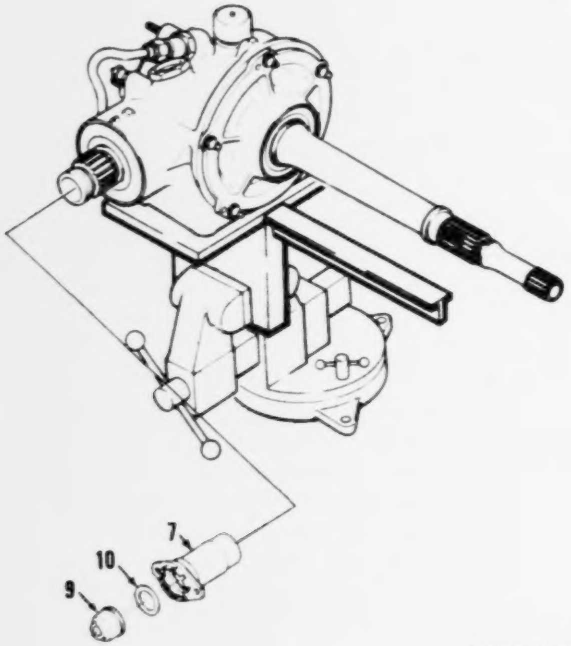
9. Insert six-inch extension through spanner (8) and engage nut inside adapter (7).

10. Use socket wrench handles on extension and spanner and loosen nut (9) inside adapter (7).

11. Remove nut (9) and washer (10). Remove tools from adapter (7).

12. Remove adapter (7).





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6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM) (CONT)

13. Remove sealant from nut (11) with plastic scraper.

NOTE

The input pinion seal consists of two parts, the seal which is installed in the nut and a mating ring on the pinion shaft. These parts are a matched set and are not to be replaced separately. Check serial number on seal.

14. Cut lockwire (D4) and remove nut (11) with spanner wrench (B270).

15. Remove packing (12) from nut (11) and discard.

16. Position nut (11) and seal driver (B130) as shown.

17. Remove seal (13) from nut (11) using arbor press.

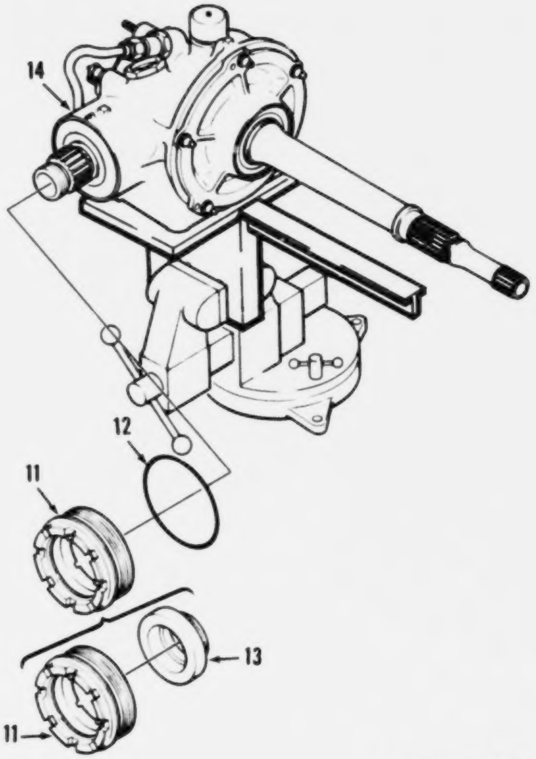
18. Remove sealant from nut (11) with plastic scraper.

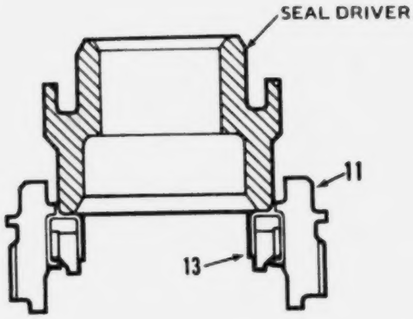
19. Remove sealant from I.D. of housing (14) using plastic scraper.

WARNING

Aliphatic naphtha (D7) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

20. Using wiping rag (D53), wipe nut (11) and I.D. of input housing (14) with aliphatic naphtha (D7). Wipe dry before solvent dries.





CROSS SECTION OF NUT, SEAL, AND SEAL DRIVER FOR SEAL REMOVAL

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21. Remove ring (15) and packing (16) from pinion shaft (17). Discard ring and packing.

INSTALL

22. Apply sealant (D29) to outside surface of seal (13).

23. Position nut (11), seal (13), and seal driver (B130), as shown. Press seal (13) into nut (11) with arbor press.

24. Remove excess sealant from seal (13).

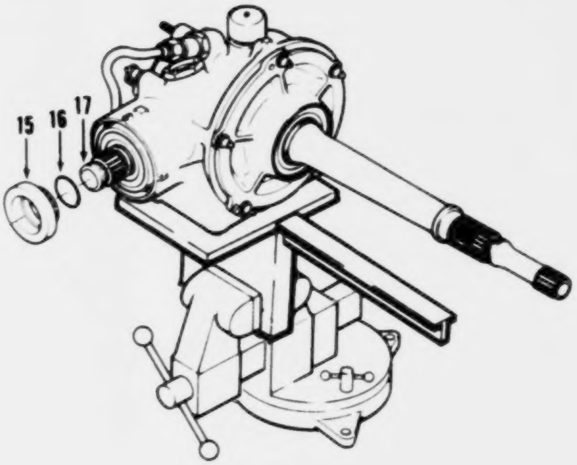
WARNING

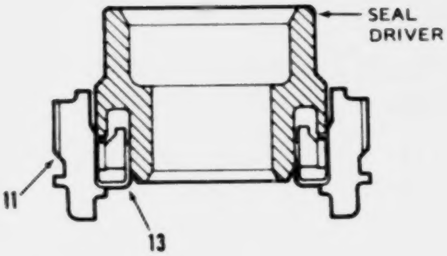
Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

25. Coat packing (16) with oil (D2 or D3).

26. Install packing (16) in groove on pinion shaft (17).

27. Install ring (15) on pinion shaft (17) over packing (16). Wider face toward input end of gearbox.





CROSS SECTION OF NUT, SEAL, AND SEAL DRIVER FOR SEAL INSTALLATION

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6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM) (CONT)

WARNING

Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

28. Coat packing (12) with oil (D2 or D3).

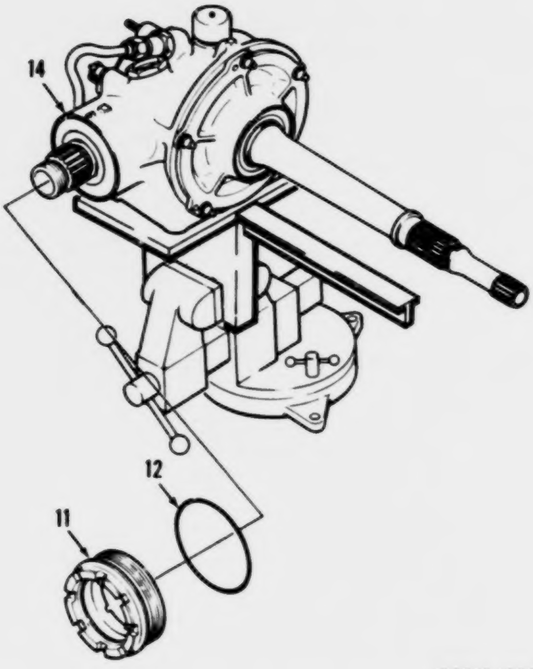
29. Install packing (12) in groove on nut (11).

30. Install nut (11) in housing (14).

31. Torque nut (11) **100-150 FOOT-POUNDS** with wrench (B71) and spanner wrench (B270).

32. Secure nut (11) to tangs on housing (14) in two places with lockwire (D4).

33. Apply a bead of sealing compound (D20) to mating surfaces of nut (11) and housing (14).



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6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM) (CONT)

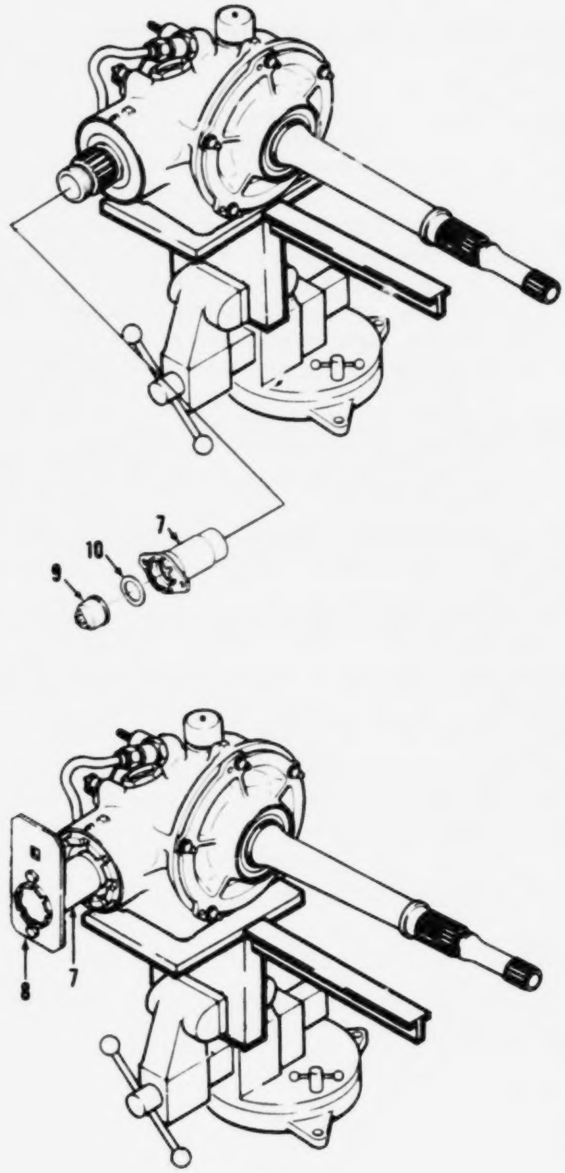
34. Install adapter (7), washer (10), and nut (9).

35. Install spanner (8) (B127) on adapter (7), using bolts, washers, and nuts provided with spanner.

36. Insert six inch extension through spanner (8) and engage nut (9).

37. Hold spanner (8) and torque nut (9) **80-100 FOOT-POUNDS**.

38. Remove spanner (8) from adapter (7).



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6-7-5. REMOVE/INSTALL TAIL ROTOR GEARBOX INPUT SEAL (AVIM) (CONT)

39. Install retaining ring (6) in groove inside adapter (7).

WARNING

Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

40. Coat packing (5) with oil (D2 or D3).

41. Install packing (5) in groove on plug (4).

42. Install plug (4) and engage adapter retaining nut (8).

43. Install lockring (3) to engage slots in plug (4) and adapter (7).

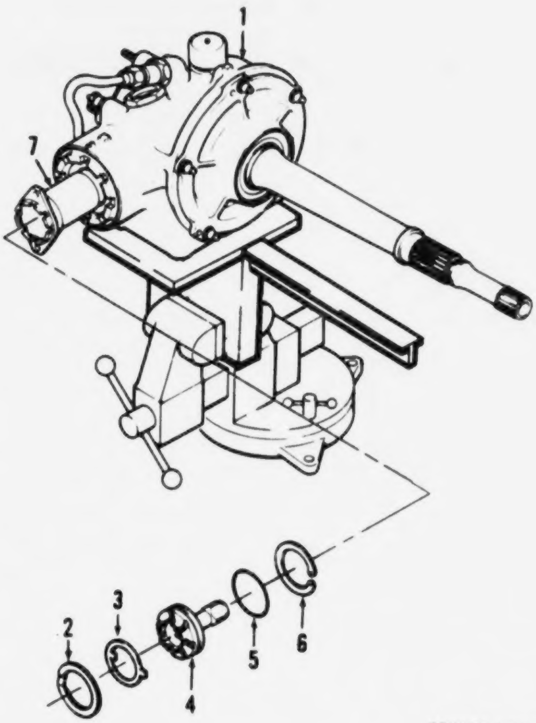
NOTE

If lockring will not engage slots in plug and adapter, plug may be removed and rotated one-quarter turn.

44. Install retaining ring (2).

INSPECT

45. Remove tail rotor gearbox (1) and fixture from vise. Remove fixture from gearbox.



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END OF TASK

6-7-6. REMOVE/INSTALL TAIL ROTOR GEARBOX OUTPUT SHAFT SEAL (AVIM)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Powertrain Repairer Tool Kit
- Support Fixture (B131)
- Jackscrews (B94)
- Heat Lamp (Work Aid)
- Bearing Puller
- Slide Hammer
- Arbor Press
- Torque Wrench 30–150 Inch-Pounds
- Plastic Scraper (Work Aid)

Parts:

- Packing

Material:

- Aliphatic Naphtha (D7)
- Sealing Compound (D20)
- Lubricating Oil (D2 or D3)
- Sealant (D29)
- Grease (D15)
- Rubber Gloves (D119)

Personnel Required:

- 66S Scout Helicopter Technical Inspector
- 68D Aircraft Powertrain Repairer

References:

- TM 55-1500-204-25/1

GO TO NEXT PAGE

6-7-6. REMOVE/INSTALL TAIL ROTOR GEARBOX OUTPUT SHAFT SEAL (AVIM) (CONT)

PREPARE

1. Install tail rotor gearbox (1) on support fixture (B131) with four washers and nuts.

2. Mount support fixture in vise.

REMOVE

3. Remove five nuts (2), steel washers (3), and aluminum washers (4).

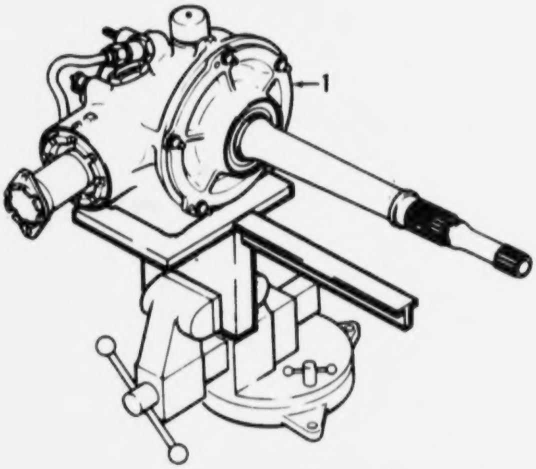
4. Remove sealing compound from cap assembly.

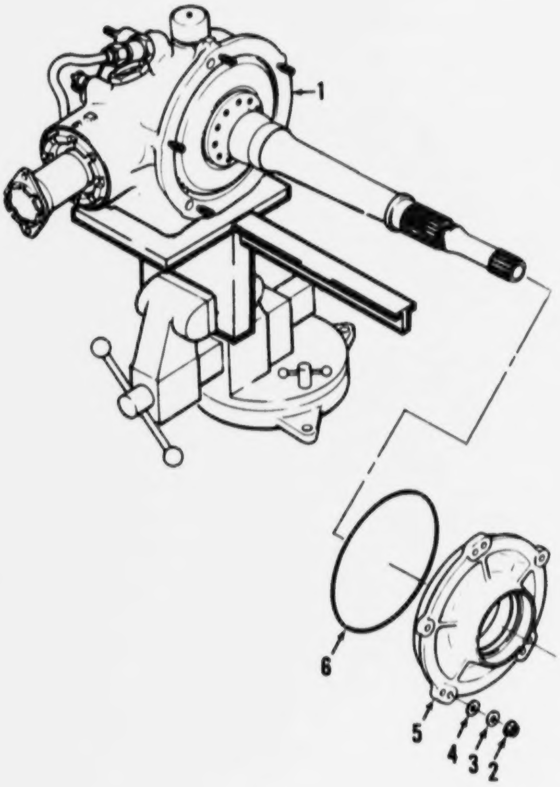
5. Remove sealing compound from threaded jackscrew holes.

6. Install three jackscrews (B94) in threaded holes in cap assembly (5).

7. Apply equal pressure to each jackscrew (B94), and remove cap assembly (5) and packing (6) from tail rotor gearbox (1). Discard packing (6).

8. Remove jackscrews (B94) from cap assembly (5).





406040-169B

GO TO NEXT PAGE

6-7-6 REMOVE/INSTALL TAIL ROTOR GEARBOX OUTPUT SHAFT SEAL (AVIM) (CONT)

9. Remove retaining ring (7) from cap assembly (5).

WARNING

Use care when handling heated parts to prevent burns. If burns occur seek medical aid.

10. Apply heat lamp to face of cap assembly (5). When heated, tap cap assembly on hard wood surface to remove roller bearing (8).

11. Place cap assembly (5) on arbor press and using an appropriate plug, press seal (9) out of cap (5).

WARNING

Aliphatic naphtha (D7) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

12. Clean old sealant from cap assembly (5) and tail rotor gearbox (1) with plastic scraper. Wipe both cleaned areas with aliphatic naphtha (D7). Wipe dry before solvent evaporates.

13. Inspect all visible parts of output shaft (11) for damage.

14. Inspect wear sleeve (10) on output shaft (11) for wear in area contact by seal (9). If sleeve has any groove greater than 0.002 inch deep, sleeve must be replaced. Also, if nicks, dents, or scratches are present or evidence of oil leakage is noted, sleeve must be replaced. If sleeve is worn beyond limits, replace gearbox (Task 6-7-1).

15. Inspect gearbox case (1) and cap assembly (5) for wear, damage and corrosion. Check studs in case (1) for condition in accordance with TM 55-1500-204-25/1.

16. Inspect roller bearing (8) for freedom of movement and damage.

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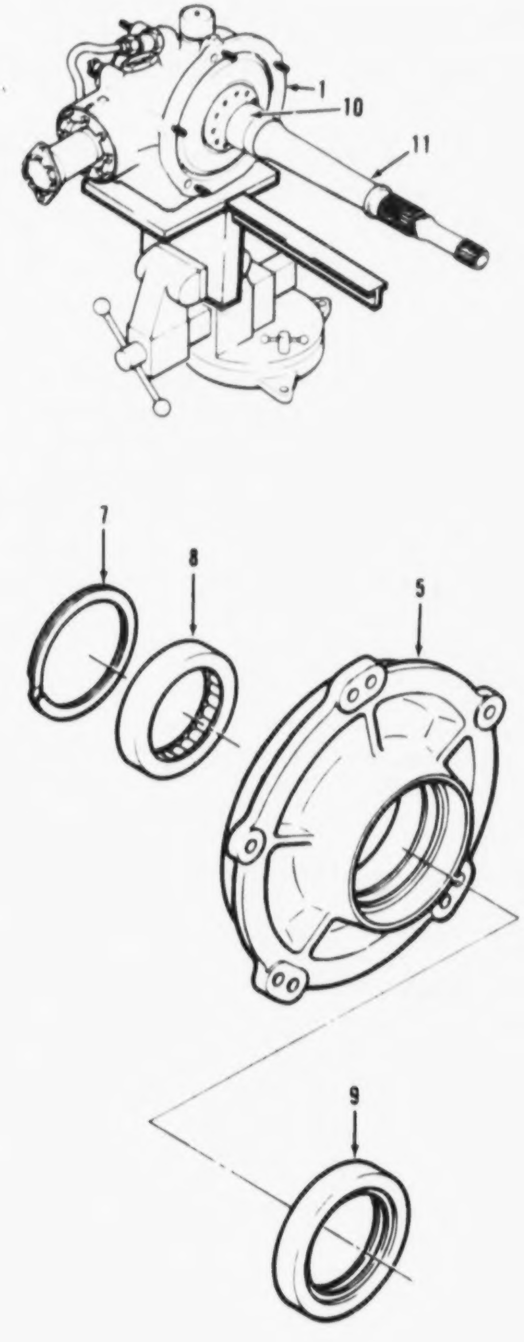

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6-7-6. REMOVE/INSTALL TAIL ROTOR GEARBOX OUTPUT SHAFT SEAL (AVIM) (CONT)

INSTALL

17. Apply sealant (D29) to outside surface of seal (9).

18. Press seal (9) into cap assembly (5) with arbor press and appropriate pressing plug. Remove excessive sealant.

WARNING

Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

19. Coat bearing (8) with oil (D2 or D3).

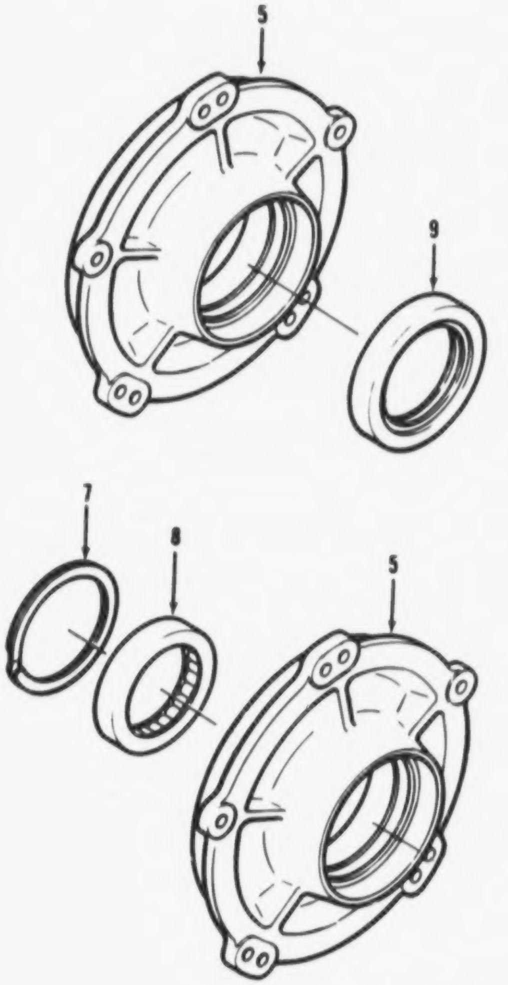
WARNING

Use care when handling heated parts to prevent burns. If burns occur seek medical aid.

20. Heat cap assembly (5) with heat lamp.

21. Install bearing (8) in cap assembly (5).

22. Install retaining ring (7) in groove in cap assembly (5).



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6-7-6. REMOVE/INSTALL TAIL ROTOR GEARBOX OUTPUT SHAFT SEAL (AVIM) (CONT)

WARNING

Lubricating oil (D2 or D3) is flammable and toxic. It can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

23. Install packing (6) on cap assembly (5). Coat packing (6) and flange of cap assembly (5) with oil (D2 or D3).

24. Fill area between lips of seal (9) with grease (D15).

25. Install cap assembly (5) on tail rotor gearbox with five aluminum washers (4), steel washers (3), and nuts (2).

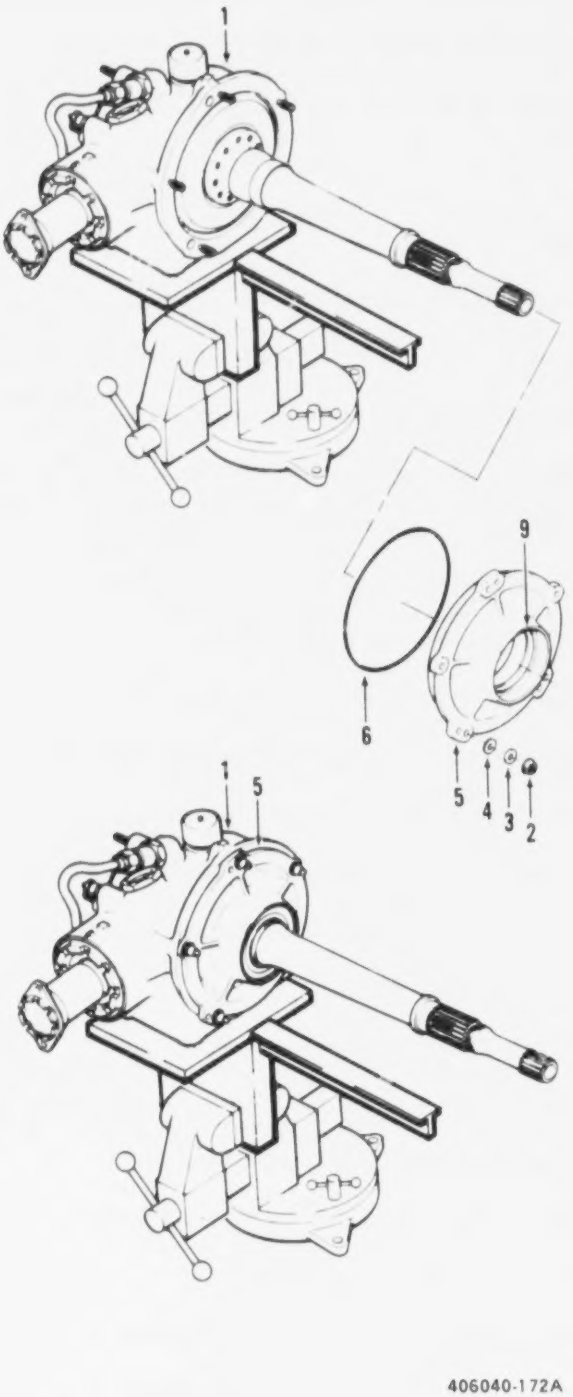
26. Torque nuts (2) **50-70 INCH-POUNDS.**

27. Apply a bead of sealing compound (D20) around mating surface of cap assembly (5), and case of tail rotor gearbox (1).

28. Cover holes in cap assy with sealing compound (D20).

INSPECT

29. Remove tail rotor gearbox (1) and fixture from vise. Remove fixture from gearbox (1).



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END OF TASK

Section VIII. OIL SYSTEM

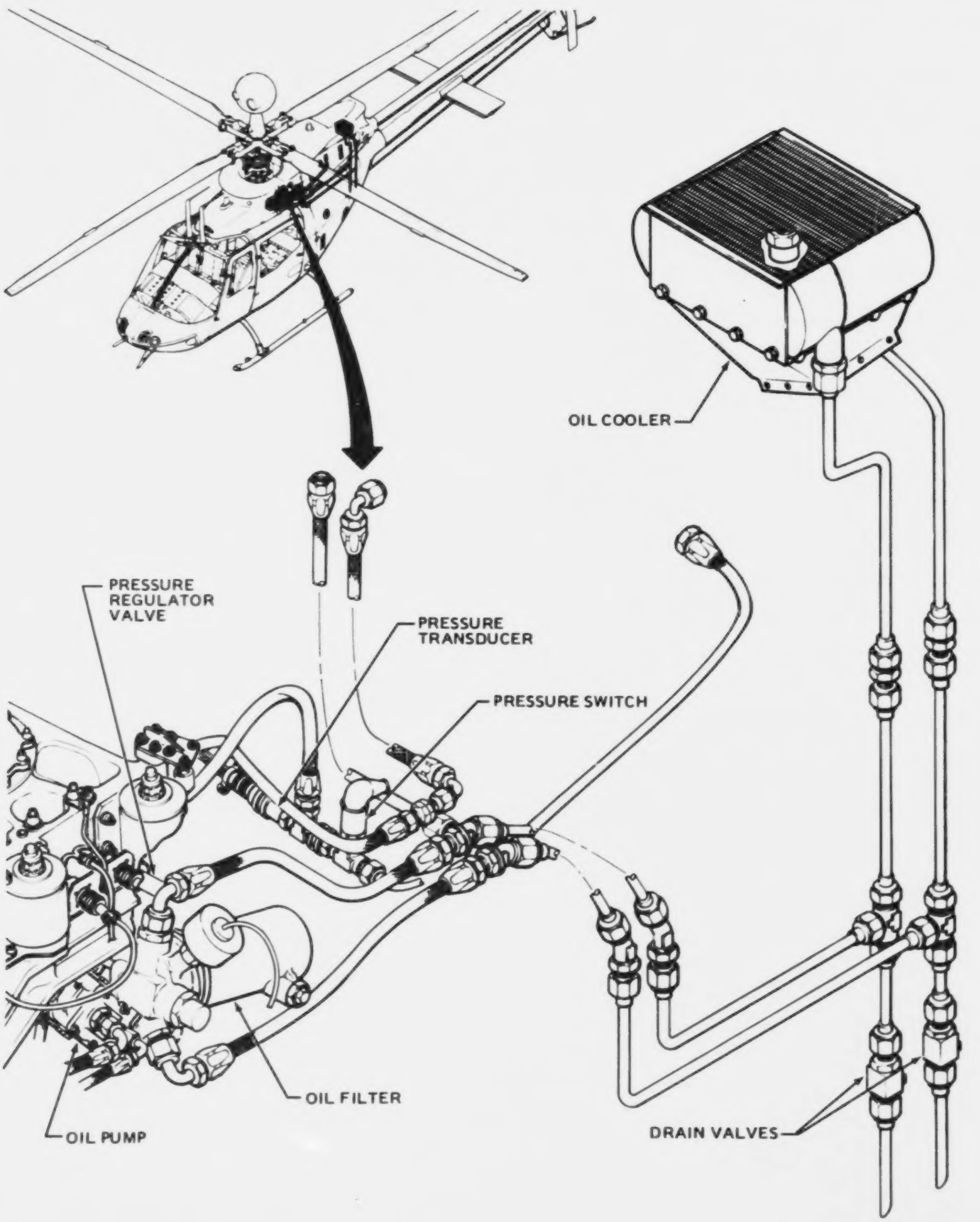
This section covers maintenance procedures for the drive train oil system. These procedures include removal, replacement, buildup, and installation.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Transmission Oil Pump	6-8-1	6-317
Clean, Inspect, and Repair Transmission Oil Pump	6-8-2	6-320
Remove/Install Transmission Oil Filters	6-8-3	6-321
Remove/Install Oil Filter Manifold	6-8-4	6-326
Clean, Inspect, and Repair Oil Filter Manifold	6-8-5	6-330
Remove/Install Oil Pressure Regulator Valve	6-8-6	6-332
Adjust Oil Pressure Regulator Valve	6-8-7	6-333
Clean, Inspect, and Repair Oil Pressure Regulator Valve	6-8-8	6-335
Remove/Install Oil Filter Bypass Valve Assembly	6-8-9	6-337
Clean, Inspect, and Repair Oil Filter Bypass Valve Assembly	6-8-10	6-339
Remove/Install Transmission Oil Jets (Number One and Two)	6-8-11	6-341
Clean, Inspect, and Repair Transmission Oil Jets (Number One and Two)	6-8-12	6-344
Remove/Install Oil Filter Inlet Hose	6-8-13	6-345
Remove/Install Oil Pressure Switch	6-8-14	6-346
Clean, Inspect, and Repair Oil Pressure Switch	6-8-15	6-348
Remove/Install Oil Pressure Transducer	6-8-16	6-349
Clean, Inspect, and Repair Oil Pressure Transducer	6-8-17	6-351
Remove/Install Oil Drain Valve	6-8-18	6-353
Clean, Inspect, and Repair Oil Drain Valve	6-8-19	6-355
Remove/Install Temperature Control Valve (Engine Oil System)	6-8-20	6-357

LIST OF TASKS (Cont)

TASK	TASK NUMBER	PAGE NUMBER
Clean, Inspect, and Repair Temperature Control Valve (Engine Oil System)	6-8-21	6-359
Remove Oil Cooler	6-8-22	6-360
Clean, Inspect, Repair, and Build Up Oil Cooler	6-8-23	6-362
Install Oil Cooler	6-8-24	6-366
Remove/Install Oil Cooler Duct	6-8-25	6-368
Clean, Inspect, and Repair Oil Cooler Duct	6-8-26	6-369


OIL COOLER
PRESSURE REGULATOR VALVE
PRESSURE TRANSDUCER
PRESSURE SWITCH
OIL FILTER
OIL PUMP
DRAIN VALVES

406040-146E

6-8-1. REMOVE/INSTALL TRANSMISSION OIL PUMP

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configuration:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 30-150 Inch-Pounds
Slide Hammer (B234)
Maintenance Platform
Heat Lamp (Work Aid)
Flange Puller (B216)
Plastic Scraper (Work Aid)

Parts:

Packing
Gasket
Nut, Steel Self-Locking

Materials:

Sealing Compound (D20)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Removed (Task 2-1-21)
Engine Cowling Removed (Task 2-1-24)
Air Induction Cowling Removed (Task 4-2-1)
Transmission Oil Drained (Task 1-4-6)
Hydraulic Pump Removed (Task 7-8-1)

GO TO NEXT PAGE

6-8-1. REMOVE/INSTALL TRANSMISSION OIL PUMP (CONT)

REMOVE HYDRAULIC PUMP ADAPTER HOUSING

1. Remove four nuts (1), four steel washers (2), and four aluminum washers (3) from hydraulic pump adapter housing (4).

2. Remove gasket (5) from transmission oil pump (6). Discard gasket (5).

REMOVE TRANSMISSION OIL PUMP

3. Thread bolts (7) of puller flange (8) into two threaded inserts (9) of transmission oil pump (6). Do not tighten bolts (7) completely at this time.

4. Thread slide hammer (10) into puller flange (8) and secure with accompanying locknuts. Tighten bolts (7).

5. Heat transmission oil pump area with heat lamp.

6. Remove transmission oil pump (6) with slide hammer (10).

7. Remove and discard packing (11).

8. Remove puller flange (8) and slide hammer (10) from unserviceable transmission oil pump (6).

9. Remove old sealant from around pump mounting pad using plastic scraper.

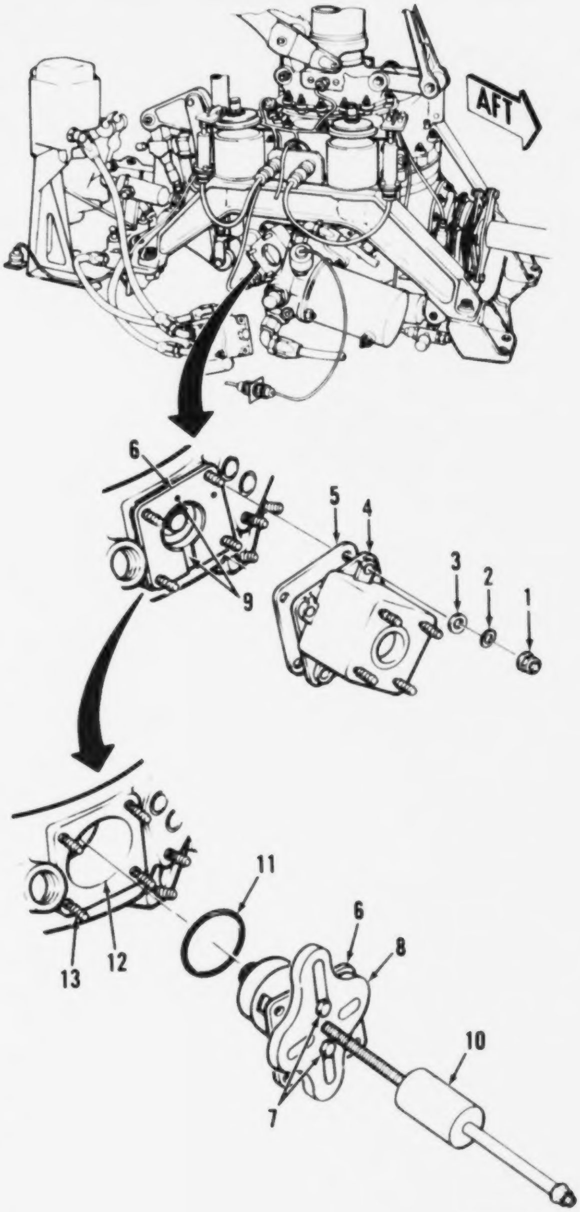
INSTALL TRANSMISSION OIL PUMP

10. Secure puller flange (8) and slide hammer (10) to serviceable transmission oil pump (6) with two bolts (7) threaded into two threaded inserts (9).

11. Heat transmission opening (12) with heat lamp. Install packing (11) on transmission oil pump (6), lubricate with lubricant (D2 or D3).

12. Align transmission oil pump (6) with four mounting studs (13) and transmission opening (12).

13. Using slide hammer (10) install transmission oil pump (6).



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6-8-1. REMOVE/INSTALL TRANSMISSION OIL PUMP (CONT)

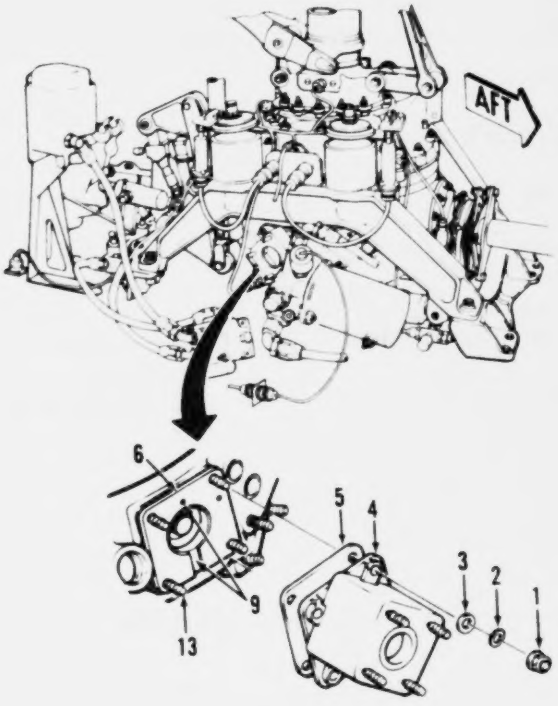
INSTALL HYDRAULIC PUMP ADAPTER HOUSING

14. Install gasket (5) on transmission oil pump (6) and four mounting studs (13).

15. Install hydraulic pump adapter housing (4) on four mounting studs (13) with four aluminum washers (3), four steel washers (2), and four nuts (1).

16. Apply sealing compound (D20) around edges of pump, adapter flanges, and transmission case.

17. Torque four nuts (1) **50-70 INCH-POUNDS**.



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INSPECT

FOLLOW-ON MAINTENANCE

Install hydraulic pump (Task 7-8-1).

Service transmission oil system (Task 1-4-6).

Install air induction cowling (Task 4-2-4).

Install engine cowling (Task 2-1-24).

Install forward fairing (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248 MTF)

END OF TASK

6-8-2. CLEAN, INSPECT, AND REPAIR TRANSMISSION OIL PUMP

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Nonmetallic Brush

Materials:

Dry Cleaning Solvent (D1)
Rubber Gloves (D119)
Sandpaper, 400-grit (D11)
Wiping Rag (D53)
Alodine (D26)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0105

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean transmission oil pump with drycleaning solvent (D1) using a nonmetallic brush.

2. Dry transmission oil pump with a wiping rag (D53).

INSPECT

3. Inspect transmission oil pump for minor nicks, scratches, and corrosion in accordance with TM 43-0105.

REPAIR

4. Minor nicks, scratches, or surface corrosion damage may be blended out using 400-grit sandpaper (D11). Apply alodine (D26) to reworked areas.

5. Nonreparable oil pump, replace if damaged. (Task 6-8-1).

END OF TASK

6-8-3. REMOVE/INSTALL TRANSMISSION OIL FILTERS

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Drain Hose (B194)
Suitable Oil Container
Torque Wrench, 30 - 150 Inch-Pounds
Filtered, Compressed Air-
Ultrasonic Cleaner
Air Compressor Unit, Reciprocating
Flushing Nozzle

Parts:

Packings (4)
Nut, Steel, Self-Locking

Materials:

Drycleaning Solvent (D1)
Plastic Bag (D132)
Lubricant (D2 or D3)
Lockwire (D4)
Trichloroethane (D47)
Rubber Gloves (D119)
Ultrasonic Cleaner Compound (D191)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Removed (Task 2-1-21)
Engine Cowling Removed (Task 2-1-24)
Air Induction Cowling Removed (Task 4-2-1)

GO TO NEXT PAGE

6-8-3. REMOVE/INSTALL TRANSMISSION OIL FILTERS (CONT)

DRAIN TRANSMISSION OIL FILTER

1. Cut lockwire and remove drain plug (1) from drain plug housing (2) installed in filter housing (3).

2. Install drain hose (4) (B194) into drain plug housing (2) and drain oil into suitable oil container.

3. Remove drain hose (4) from drain plug housing (2) and install drain plug (1).

REMOVE DISPOSABLE FILTER AND HOUSING

4. Remove two nuts (5) and two washers (6) securing filter housing (3) to oil filter manifold (7).

5. Remove oil filter housing (3), filter element (8), and packing (9) from oil filter manifold (7). Discard packing (9).

6. Inspect filter element (8) for metal or fungus contamination, then discard filter element (8).

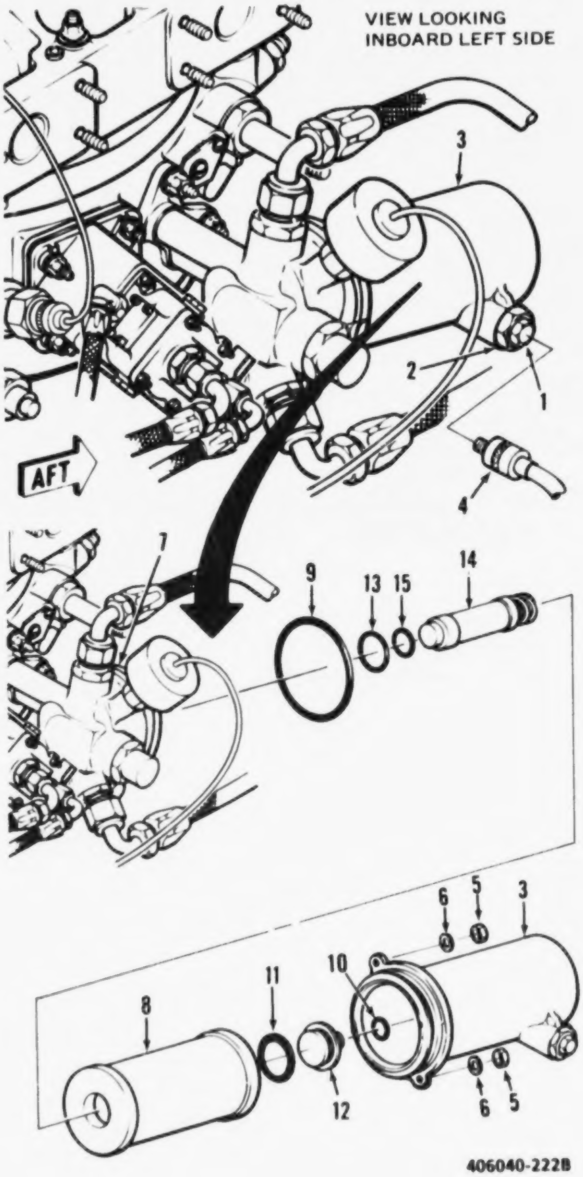
7. Remove packings (10 and 11) from bypass indicator valve (12). Discard packings (10 and 11).

8. Remove bypass indicator valve (12).

9. Remove packing (13) from oil filter manifold (7). Discard packing (13).

REMOVE 45-MICRON METAL FILTER

10. Remove 45-micron metal filter (14) with packing (15) from oil filter manifold (7). Discard packing (15).



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CLEAN 45-MICRON METAL FILTER

11. Clean 45-micron metal filter as follows:

a. Preferred Method.

WARNING

Drycleaning solvent (D1) and trichloroethane are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated areas away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

(1) Ultrasonically clean 45-Micron filter at 140-150 °F. Continuously filter ultrasonic cleaner at low pressure through a 3-micron filter. Maintain a minimum of 7 PSI at bottom of tank area. Fluid depth within cleaning tank is not to exceed 14 inches.

(2) Allow 10-30 minutes for cleaning time.

WARNING

Compressed air is dangerous when directed toward yourself or another person. Use goggles to protect eyes and face. Do not exceed 30 psig. Do not direct airstream toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face. If injury occurs, seek medical aid.

CAUTION

Use of common shop grade compressed air can result in a contaminated filter. Use only filtered compressed air.

GO TO NEXT PAGE

6-8-3. REMOVE/INSTALL TRANSMISSION OIL FILTERS (CONT)

(3) To dry filter, place in an oven at 120° ± 10°F or use filtered, compressed air.

(4) When filter is dry, place in a clean plastic bag (D132) and seal bag.

b. Alternate Method.

WARNING

Drycleaning solvent (D1) and trichloroethane are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated areas away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

(1) Use drycleaning solvent (D1), trichloroethane (D47) or vigorously agitate filter in solution. Repeat the cycle three times using new solvent solution each time.

(2) Using a flushing nozzle and filtered, compressed air, backflush the element during cleaning procedure.

(3) Apply air to filter to produce a flow from inside to outside filter. This reverse flow will result in a more thorough cleaning of the filter.

WARNING

Compressed air is dangerous when directed toward yourself or another person. Use goggles to protect eyes and face. Do not exceed 30 psig. Do not direct airstream toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face. If injury occurs, seek medical aid.

GO TO NEXT PAGE

6-8-3. REMOVE/INSTALL TRANSMISSION OIL FILTERS (CONT)

CAUTION

Use of common shop grade compressed air can result in a contaminated filter. Use only filtered compressed air.

(4) To dry filter use filtered compressed air or dry in oven at 120° ± 10°F.

12. Inspect filter element visually for damage to filter media, end fittings, or spring.

13. Replace filter if any defects are visible on the filter media, end fittings, or bond joints.

NOTE

All packings should be lubricated with lubricant (D2 or D3).

INSTALL 45-MICRON METAL FILTER

14. Install packing (15) on 45-micron metal filter (13) and install 45-micron metal filter (14) with packing (15) into oil filter manifold (7).

INSTALL DISPOSABLE OIL FILTER ELEMENT AND HOUSING

15. Install packings (10 and 11) on bypass indicator valve (12) in oil filter housing (3).

16. Install filter element (8) into oil filter housing (3) and seated on packing (10).

17. Install packing (9) on oil filter housing (3).

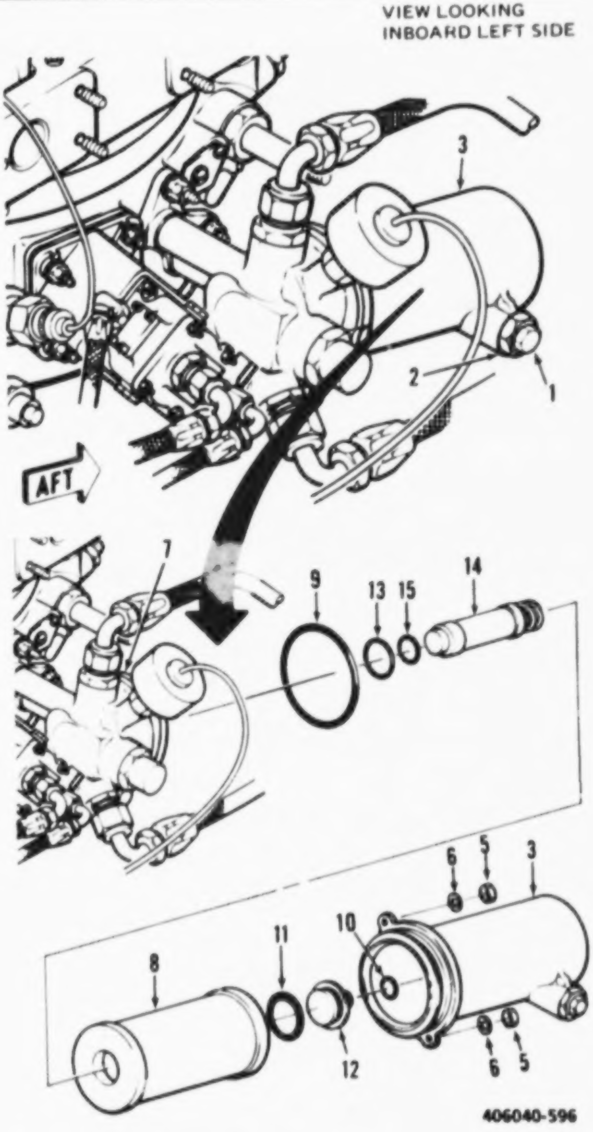
18. Install oil filter element (8) and oil filter housing (3) on oil filter manifold (7) with two washers (6) and two nuts (5).

19. Torque nuts (5) **100-140 INCH-POUNDS**.

INSPECT

20. Secure drain plug (1) to drain plug housing (2) with lockwire (D4).

INSPECT



FOLLOW-ON MAINTENANCE

Service transmission oil system (Task 1-4-6)

Install air induction cowling (Task 4-2-4)

Install engine cowling (Task 2-1-24)

Install forward fairing (Task 2-1-21)

Pilot perform MOC (TM 55-1520-248 MTF)

END OF TASK

6-8-4. REMOVE/INSTALL OIL FILTER MANIFOLD

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Drain Hose (B194)

Parts:

Packing (8)
Nut, Steel, Self-Locking

Materials:

Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248 MTF

Equipment Condition:

Engine Cowling Removed (Task 2-1-24)
Forward Fairing Removed (Task 2-1-21)
Air Induction Cowling Removed (Task 4-2-1)
Transmission Oil Drained (Task 1-4-6)

GO TO NEXT PAGE

6-8-4. REMOVE/INSTALL OIL FILTER MANIFOLD (CONT)

REMOVE

1. Disconnect oil filter inlet hose fitting (1) from oil filter manifold inlet fitting (2). Cap oil filter inlet hose fitting (2).

2. Disconnect oil filter outlet hose fitting (3) from oil filter manifold outlet fitting (4). Cap oil filter outlet hose fitting (3).

3. Remove oil filters and filter housing (5) (Task 6-8-3) from oil filter manifold (6).

4. Disconnect electrical connector (7) from cabin roof mounted connector (8).

5. Remove three nuts (9), three steel washers (10), and three aluminum washers (11) securing oil filter manifold (6) to transmission (12).

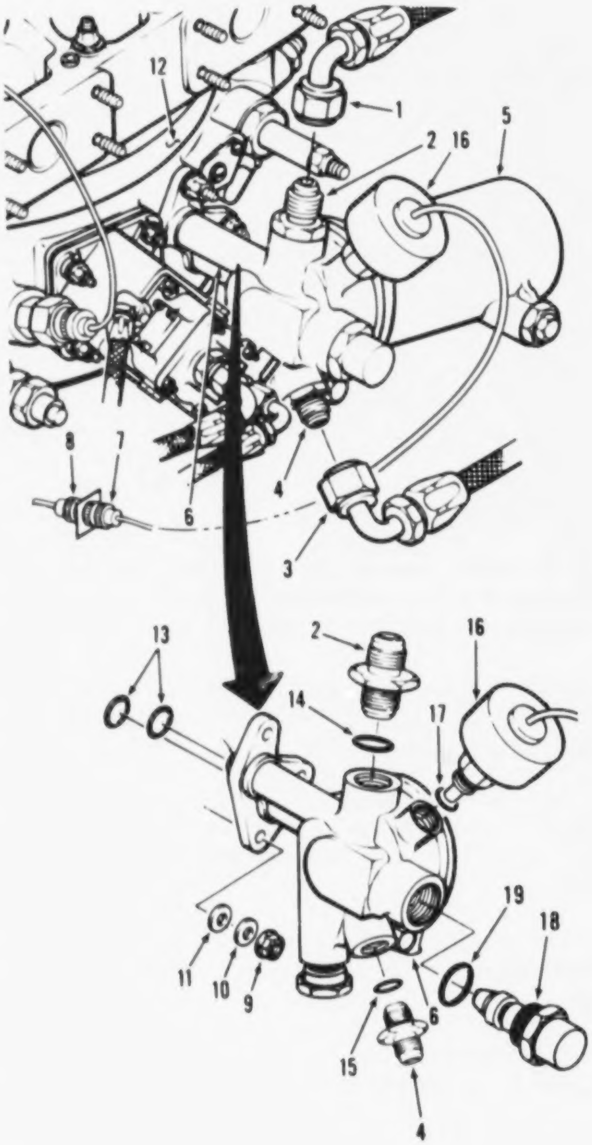
6. Remove unserviceable oil filter manifold (6) with two packings (13) and place on suitable work surface.

7. Remove oil filter manifold inlet fitting (2) with packing (14) from oil filter manifold (6). Discard packing (14).

8. Remove oil filter manifold outlet fitting (4) with packing (15) from oil filter manifold (6). Discard packing (15).

9. Cut lockwire and remove oil temperature transducer (16) with packing (17) from oil filter manifold (6). Discard packing (17).

10. Cut lockwire and remove thermostat (18) with packing (19) from oil filter manifold (6). Discard packing (19).



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6-8-4. REMOVE/INSTALL OIL FILTER MANIFOLD (CONT)

11. Cut lockwire and remove oil filter bypass valve (20) with packing (21) from oil filter manifold (6). Discard packing (21).

NOTE

The temperature transducer, thermostat oil filter bypass valve and the manifold inlet and outlet fittings should be retained to be installed on serviceable oil pressure manifold.

INSTALL

NOTE

All packings should be lubricated with lubricant (D2 or D3).

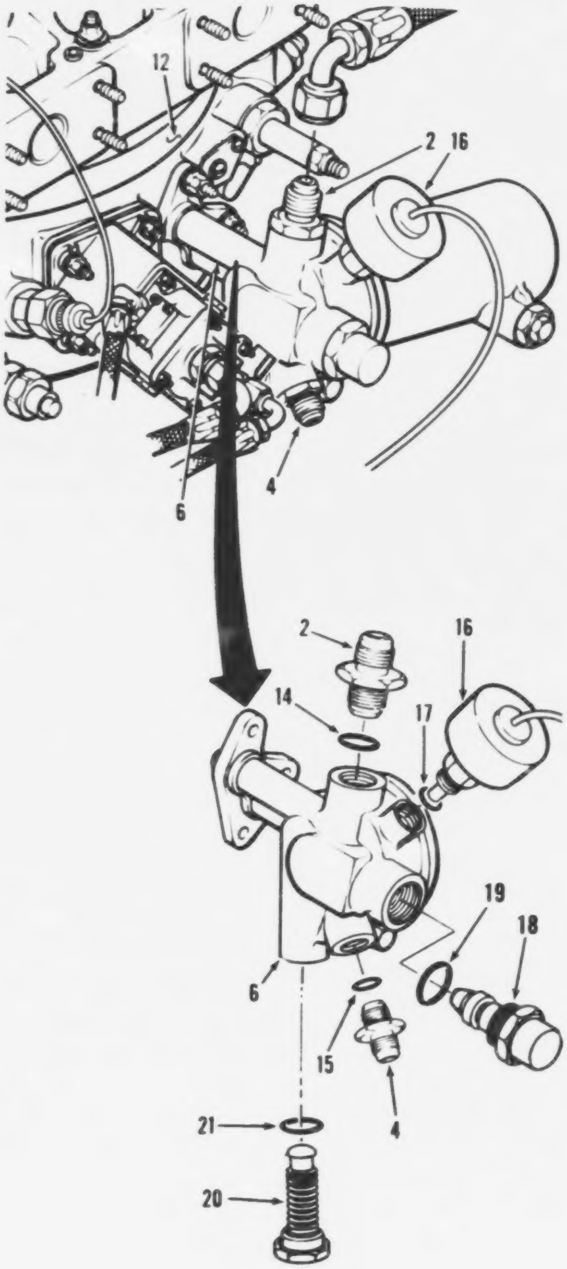
12. Install packing (21) on oil filter bypass valve (20) and install oil filter bypass valve (20) into oil filter manifold (6). Secure with lockwire (D4).

13. Install packing (19) on thermostat (18) and install thermostat (18) into oil filter manifold (6). Secure with lockwire (D4).

14. Install packing (17) on oil temperature transducer (16) and install oil temperature transducer (16) into oil filter manifold (6). Secure with lockwire (D4).

15. Install packing (15) on oil filter manifold outlet fitting (4) and install fitting (4) into oil filter manifold (6).

16. Install packing (14) on oil inlet fitting (2) and install fitting (2) into oil filter manifold (6).



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GO TO NEXT PAGE

6-8-4 REMOVE/INSTALL OIL FILTER MANIFOLD (CONT)

17. Install two packings (13) on oil filter manifold (6) and install oil filter manifold (6) on transmission (12) with three aluminum washers (11), three steel washers (10), and three nuts (9).

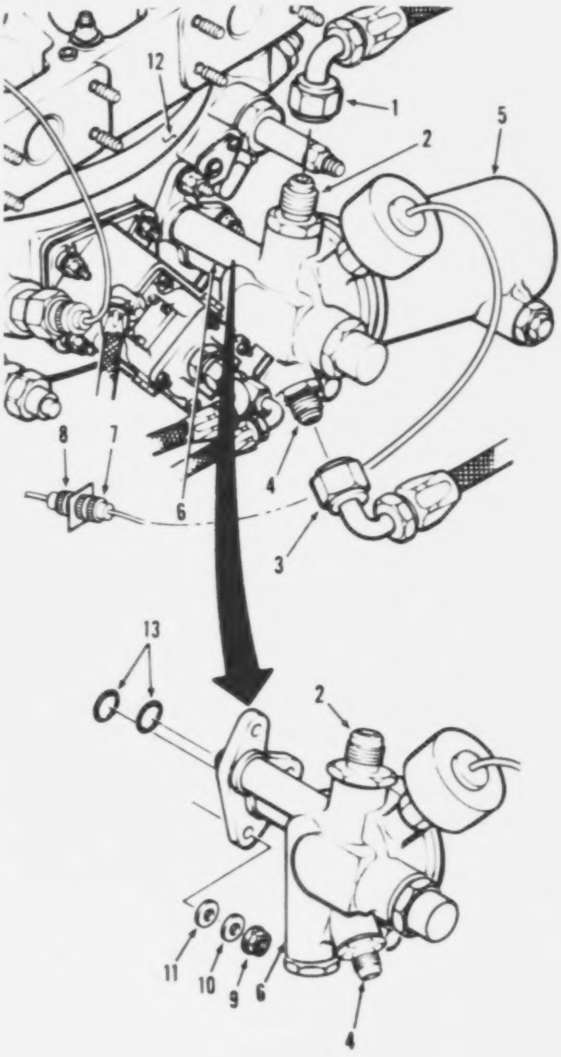
18. Torque nuts (9) **50-70 INCH-POUNDS**.

19. Connect electrical connector (7) to cabin roof mounted electrical connector (8).

20. Connect oil filter outlet hose fitting (3) to oil filter manifold outlet fitting (4).

21. Connect oil filter inlet hose fitting (1) to oil filter manifold inlet fitting (2).

22. Replace oil filter and reinstall filter housing (5) to oil filter manifold (6) (Task 6-8-3).



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INSPECT

FOLLOW-ON MAINTENANCE

Service transmission oil system (Task 1-4-6).

Install air induction cowling (Task 4-2-4).

Install engine cowling (Task 2-1-24).

Install forward fairing (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248 MTF).

END OF TASK

6-8-5. CLEAN, INSPECT, AND REPAIR OIL FILTER MANIFOLD

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Air Blow Gun
Separator, Oil and Water
Hose Assembly, Non-metallic
Air Compressor Unit, Reciprocating
Torque Wrench — 100-750 Inch-Pounds
Goggles

Parts:

Bushing
Stud

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Sandpaper (D11)
Polyamide Epoxy Primer (D13)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

CLEAN

WARNING

Drycleaning solvent (D1) and polyamide epoxy primer (D13) are flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated areas away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean oil filter manifold with drycleaning solvent (D1).

WARNING

Compressed air is dangerous when directed toward yourself or another person. Use goggles to protect eyes and face. Do not exceed 30 psig. Do not direct airstream toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face. If injury occurs, seek medical aid.

GO TO NEXT PAGE

6-8-5. CLEAN, INSPECT, AND REPAIR OIL FILTER MANIFOLD (CONT)

2. Dry oil filter manifold with filtered compressed air.

INSPECT

3. Inspect oil filter manifold for cracks, nicks, scratches, burrs, and general condition.

4. Inspect for damaged, loose or worn bushings (1).

5. Inspect for damaged, loose or worn studs (2).

REPAIR

6. Burnish small nicks and scratches using sandpaper, 400 grit (D11).

7. Apply polyamide epoxy primer (D13) after repair is completed.

8. Replace loose or damaged studs as follows:

NOTE

These instructions are applicable to studs of the standard type which thread directly into the cases and sleeves.

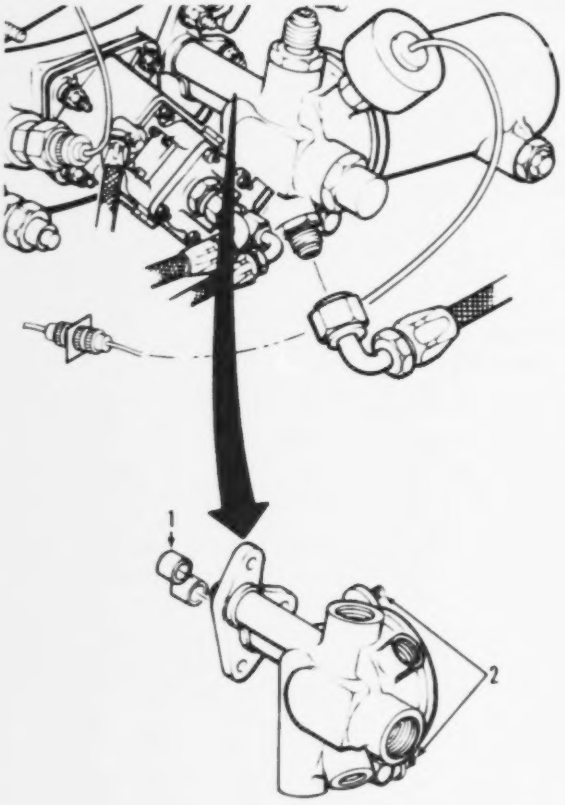
a. Measure and record height of stud before removal of damaged stud. Use suitable tool to grip stud and turn out slowly to avoid seizure and breakage. If stud is broken off, drill hole in center of broken stud and use ezy-out type of extractor.

b. Select a replacement stud; generally the next larger oversize will be required to obtain correct driving torque. Driving torque for 5/16-inch stud is **100-225 INCH-POUNDS** torque.

9. Replace damaged or loose bushings as follows:

a. Use a suitable tool to grip bushing and pull bushing from housing.

b. Inspect bushing bore for 0.688 to 0.689 inches during removal.



406040-265

c. Replace if damage exceeds limits.

d. Align and press new bushings into oil filter manifold.

END OF TASK

6-8-6. REMOVE/INSTALL OIL PRESSURE REGULATOR VALVE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Wrench, Open End, 1 1/8 Inch
Maintenance Platform

Parts:

Packing (2)

Materials:

Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

1. Gain access to oil pressure regulator valve through left side panel of air induction cowling.

REMOVE

2. Cut lockwire and remove oil pressure regulator valve (1) with packings (2 and 3) from transmission (4).

3. Remove packing (2) from groove (5) at bottom of oil pressure regulator valve and packing (3) from transmission mating surface (6) of oil pressure regulator valve (1). Discard packing (2 and 3).

4. Inspect oil pressure regulator mounting area of transmission (4) for any damaged threads.

INSPECT

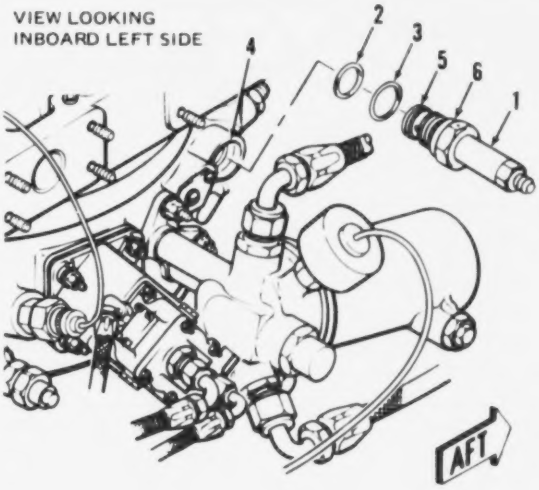
5. Inspect oil pressure regulator valve (Task 6-8-8).

INSTALL

NOTE

> All packings should be lubricated with lubricant (D2 or D3) before installing.

6. Install packing (3) against transmission mating surface (6) of oil pressure regulator valve (1).



406040-227

7. Install packing (2) in groove (5) at bottom of oil pressure regulator valve (1).

8. Install oil pressure regulator valve (1) into transmission (4) and secure with lockwire (D4).

INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248 MTF).

Adjust oil pressure regulator valve (Task 6-8-7).

END OF TASK

6-8-7. ADJUST OIL PRESSURE REGULATOR VALVE

This task covers: Adjustment (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
APU
Maintenance Platform
Gage, Direct pressure

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-10

Equipment Condition:

28 VDC External Power Applied (Task 9-3-10)

General Safety Instructions:

WARNING

MAIN AND TAIL ROTOR BLADES

Stay clear of turning main and tail rotor blades. Wind gusts, coast down, or cyclic movement may cause the main rotor blade to flap down below the height of a person. Dangerous winds are created by the main rotor blades when blades are operated at or near top rpm. Adequate distance must be maintained from main and tail rotor blades during operation. Severe injury or death may result.

GO TO NEXT PAGE

6-8-7. ADJUST OIL PRESSURE REGULATOR VALVE (CONT)

1. Gain access to oil pressure regulator valve through air induction cowling left side panel.

2. Remove oil pressure transmitter switch (1) (Task 6-8-14).

3. Install tee (2) in oil pressure line tee (3) in place of oil pressure transmitter switch.

4. Install oil pressure transmitter switch (1) on tee (2).

5. Install 0 to 200 psi direct reading oil pressure gage (4) on tee (2).

6. Pilot start helicopter and run up to normal operating RPM (TM 55-1520-248-10).

NOTE

> Oil pressure regulator valve adjustment should not be attempted until oil is hot or unless pressure is below 30 PSI at normal operating RPM.

7. Check oil pressure gage (4) for indicated range of 40-60 PSI.

ADJUST

8. While holding adjustment screw (5), back off jamnut (6) just enough to adjust oil pressure.

9. Turn adjustment screw (5) clockwise to increase oil pressure to a range of 45-55 PSI.

10. When correct pressure is achieved hold adjustment screw (5) with a flat tip screwdriver and tighten jamnut (6).

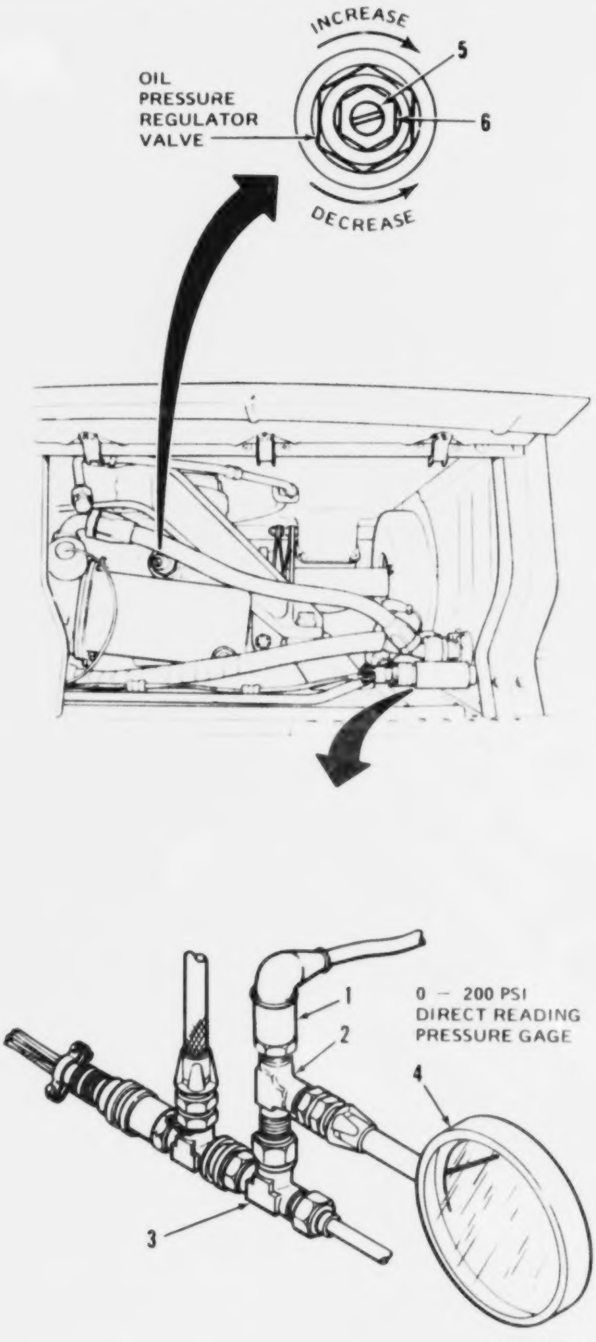
11. Pilot shut down helicopter (TM 55-1520-248-10).

12. Remove 0 to 200 psi direct reading oil pressure gage (4) from tee (2).

13. Remove oil pressure transmitter switch (1) from tee (2).

14. Remove tee (2) from oil pressure line tee (3).

15. Install oil pressure transmitter switch (1) (Task 6-8-14).


INCREASE
5
OIL PRESSURE REGULATOR VALVE
6
DECREASE
1
2
0 — 200 PSI DIRECT READING PRESSURE GAGE
4
3

406040-274

FOLLOW-ON MAINTENANCE

Disconnect APU. (Task 9-3-11)

END OF TASK

6-8-8. CLEAN, INSPECT, AND REPAIR OIL PRESSURE REGULATOR VALVE

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Parts:

Preformed Packing
Nut

Materials:

Drycleaning Solvent (D1)
Wiping Rag (D53)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0105

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

6-8-8 CLEAN, INSPECT, AND REPAIR OIL PRESSURE REGULATOR VALVE (CONT)

DISASSEMBLE

1. Remove jamnut (1) from regulator valve (2).

2. Remove retaining ring (3), piston (4), and spring (5) from regulator valve (2).

3. Remove screw (6). Remove and discard packing (7).

CLEAN

4. Clean regulator valve (2) with drycleaning solvent (D1) using a nonmetallic brush.

5. Clean jamnut (1) with drycleaning solvent (D1) using a nonmetallic brush.

6. Clean piston (4) with drycleaning solvent (D1) using a wiping rag (D53).

7. Dry regulator valve (2) with wiping rag (D53).

8. Dry jamnut (1) with wiping rag (D53).

9. Dry piston (4) with wiping rag (D53).

INSPECT

10. Inspect regulator valve (2) for cracks, thread damage, and corrosion in accordance with TM 43-0105.

11. Inspect jamnut (1) for damaged threads and corrosion in accordance with TM 43-0105.

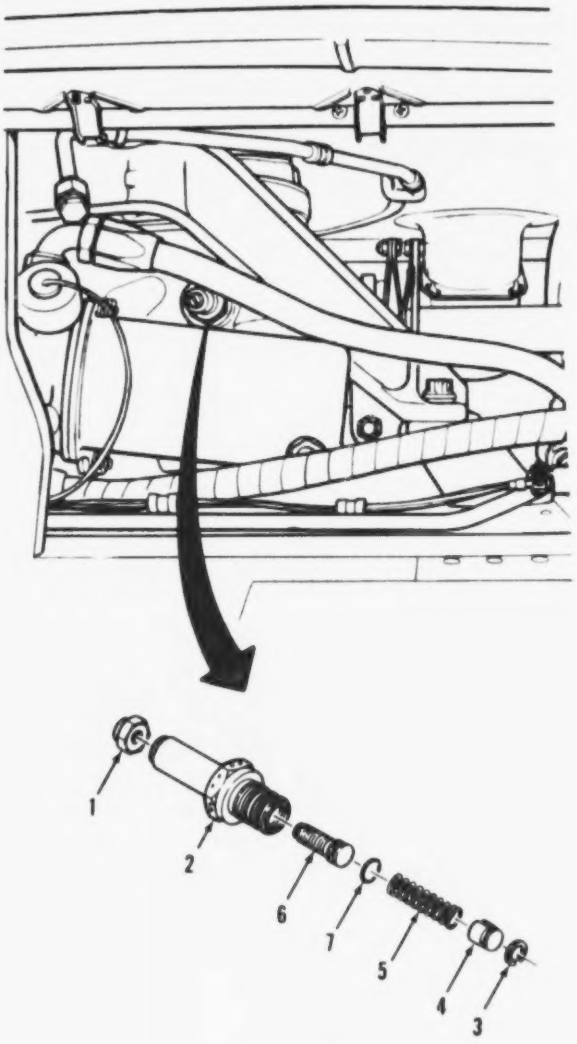
12. Inspect piston (4) and spring (5) for freedom of movement and any visible damage.

REPAIR

13. Replace regulator valve (2) if cracked or thread area is damaged (Task 6-8-6).

14. Replace jamnut (1) if damaged.

15. Replace regulator valve (2) if piston (4), spring (5), or screw (6) do not meet inspection requirements.



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ASSEMBLE

16. Install packing (7) on screw (6).

17. Install screw (6) in regulator valve (2).

18. Install spring (5), piston (4), and retaining ring (3) in regulator valve (2).

19. Install jamnut (1) on regulator valve (2).

END OF TASK

6-8-9. REMOVE/INSTALL OIL FILTER BYPASS VALVE ASSEMBLY

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Wrench, Open End, 1 Inch
Tool Set

Parts:

Packing

Materials:

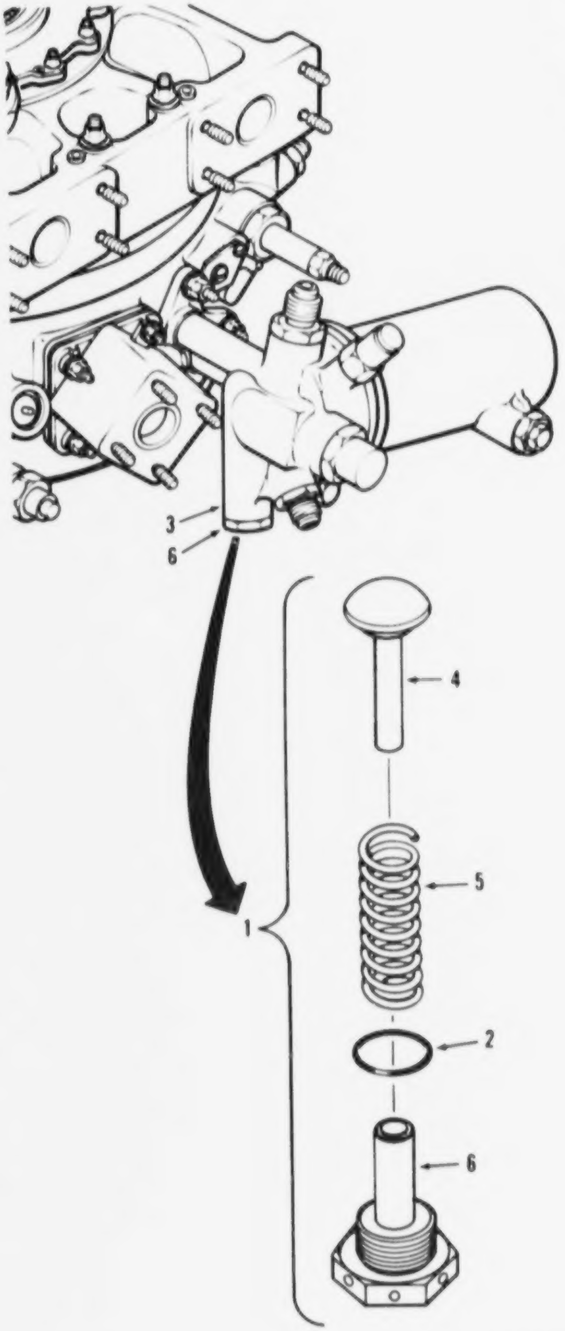
Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

GO TO NEXT PAGE

6-8-9. REMOVE/INSTALL OIL FILTER BYPASS VALVE ASSEMBLY (CONT)



406040-230

REMOVE

1. Cut lockwire and remove oil filter bypass valve assembly (1) with packing (2) from oil filter manifold (3). Discard packing (2).

NOTE

Parts not meeting inspection requirements should be discarded.

2. Inspect bypass valve (4) (Task 6-8-10).

3. Inspect bypass valve spring (5) (Task 6-8-10).

4. Inspect bypass valve retainer (6) (Task 6-8-10).

INSTALL

5. Lightly lubricate packing (2) with lubricant (D2 or D3) and install packing (2) on oil filter bypass valve assembly (1).

6. Install oil filter bypass valve assembly (1) with packing (2) into oil-filter manifold (3). Secure with lockwire (D4).

END OF TASK

6-8-10. CLEAN, INSPECT, AND REPAIR OIL FILTER BYPASS VALVE ASSEMBLY

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rag (D53)

Personnel Required:

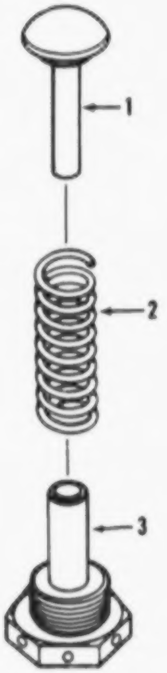
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

6-8-10 CLEAN, INSPECT, AND REPAIR OIL FILTER BYPASS VALVE ASSEMBLY (CONT)



406040-277

CLEAN

1. Clean bypass valve (1) with drycleaning solvent (D1) using a nonmetallic brush.

2. Clean bypass valve spring (2) with drycleaning solvent (D1) using a nonmetallic brush.

3. Clean bypass valve retainer (3) with drycleaning solvent (D1) using a nonmetallic brush.

INSPECT

NOTE

Parts not meeting inspection requirements should be rejected.

4. Inspect bypass valve (1) for wear and damage.

5. Inspect bypass valve spring (2) for free length of 2.90 inches.

6. Inspect bypass valve retainer (3) for damaged threads.

REPAIR

7. Detail parts of the oil filter bypass valve assembly are nonreparable. Replace any item which fails inspection (Task 6-8-9).

END OF TASK

6-8-11. REMOVE/INSTALL TRANSMISSION OIL JETS (NUMBER ONE AND TWO)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packing (7)

Materials:

Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Forward Cowling Removed (Task 2-1-21)
Engine Cowling Removed (Task 2-1-24)
Air Induction Cowling Removed (Task 4-2-1)

GO TO NEXT PAGE

6-8-11. REMOVE/INSTALL TRANSMISSION OIL JETS (NUMBER ONE AND TWO) (CONT)

REMOVE OIL JET NUMBER ONE

1. Cut lockwire securing screw (1) to plate retaining screw (2) and remove screw (1) securing oil jet number one (3) to transmission oil jet mounting port (4).

2. Remove oil jet number one (3) with packings (5, 6, 7, and 8) from transmission oil jet mounting port (4).

3. Discard packings (5, 6, 7, and 8).

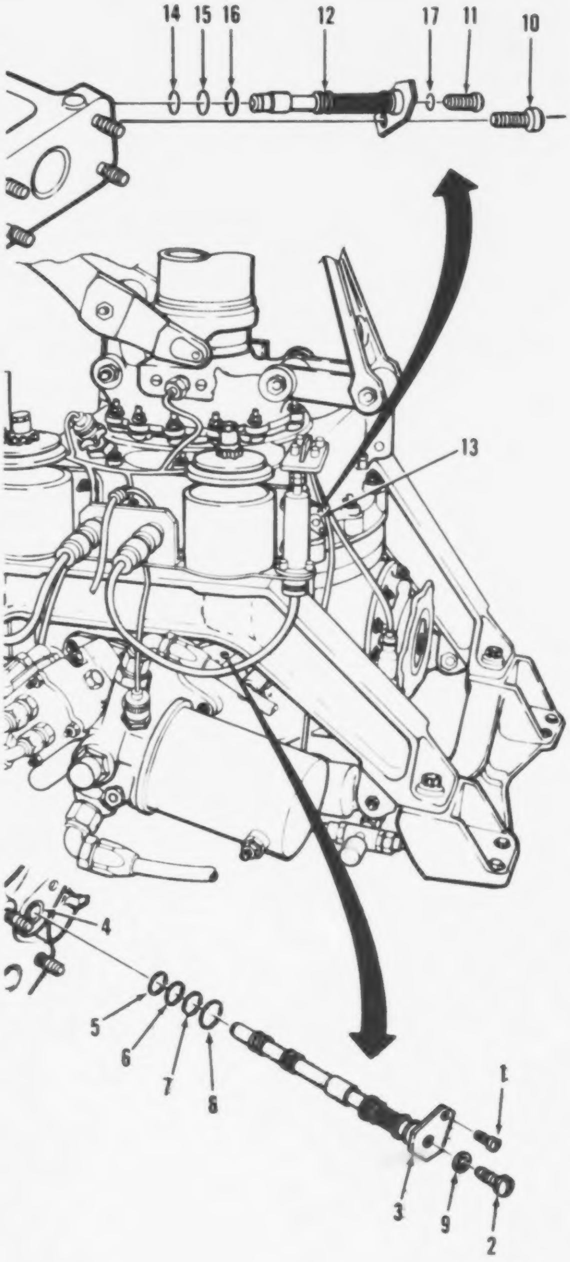
4. Remove screw (2) and sealing washer (9) from oil jet number one (3).

REMOVE OIL JET NUMBER TWO

5. Cut lockwire securing screw (10) to plate retaining screw (11) and remove screw (10) securing oil jet number two (12) to transmission oil jet mounting port (13).

6. Remove oil jet number two (12) with packings (14, 15, and 16) from transmission oil jet mounting port (13). Discard packings (14, 15, and 16).

7. Remove plate retaining screw (11) and sealing washer (17).



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6-8-11 REMOVE/INSTALL TRANSMISSION OIL JETS (NUMBER ONE AND TWO) (CONT)

INSTALL OIL JET NUMBER TWO

8 Lightly lubricate packings (14, 15, and 16) with lubricant (D2 or D3) and install on oil jet number two (12).

9 Install sealing washer (17) and plate retaining screw (11) on oil jet number two (12).

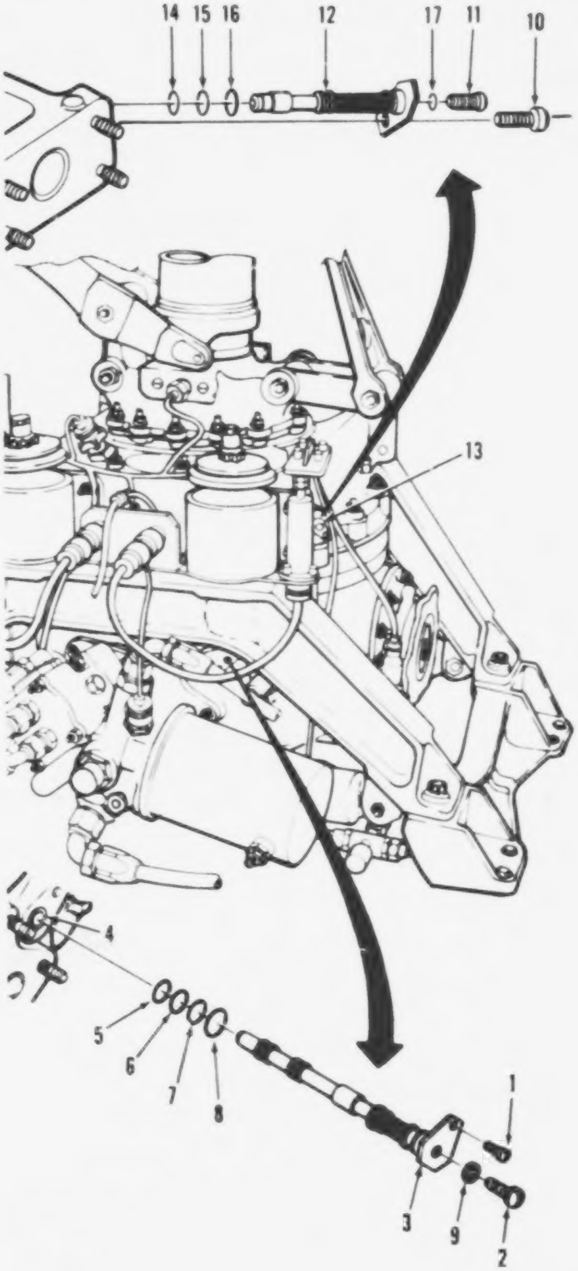
10 Install oil jet number two (12) into transmission oil jet mounting port (13) with screw (10). Secure screw (10) to plate retaining screw (11) with lockwire (D4).

INSTALL OIL JET NUMBER ONE

11 Lightly lubricate packings (5, 6, 7, and 8) with lubricant (D2 or D3) and install on oil jet number one (3).

12 Install sealing washer (9) and plate retaining screw (2) on oil jet number one (3).

13 Install oil jet number one (3) into transmission oil jet mounting port (4) with screw (1). Secure screw (1) to plate retaining screw (2) with lockwire (D4).



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INSPECT

FOLLOW-ON MAINTENANCE

Install air induction cowling (Task 4-2-4).

Install engine cowling (Task 2-1-24).

Install forward fairing (Task 2-1-21).

END OF TASK

6-8-12. CLEAN, INSPECT, AND REPAIR TRANSMISSION OIL JETS (NUMBER ONE AND TWO)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Air Blow Gun
Separator Oil and Water
Hose Assembly Nonmetallic
Air Compressor Unit, Reciprocating

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

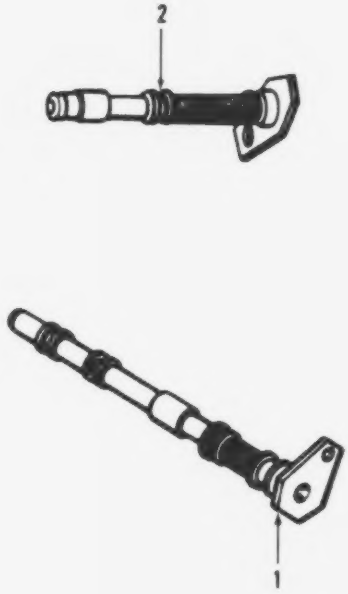
1. Clean oil jets (1 and 2) with drycleaning solvent (D1).

WARNING

Compressed air is dangerous when directed toward yourself or another person. Use goggles to protect eyes and face. Do not exceed 30 psig. Do not direct airstream toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.

2. Dry oil jets (1 and 2) with filtered compressed air.

INSPECT



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3. Inspect oil jets (1 and 2) for bends, burrs, and clogged condition.

REPAIR

4. Replace oil jet if bends or burrs are detected.

5. Unclog jets by backflushing with solvent (D1) and filtered compressed air.

END OF TASK

6-8-13 REMOVE/INSTALL OIL FILTER INLET HOSE

This task covers: Replacement (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Materials:

Wiping Rag (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

REMOVE

1. Gain access to oil filter inlet hose (1) through access door, left side induction cowling.

2. Disconnect forward fitting (2) from inlet fitting (3) installed on oil filter manifold (4).

3. Disconnect aft fitting (5) from fitting (6) installed on forward firewall assembly (7).

CLEAN

4. Clean oil filter inlet hose (1) with a clean dry wiping rag (D53).

INSTALL

5. Install oil filter inlet hose (1) forward fitting (2) on inlet fitting (3) oil filter manifold (4).

6. Install aft fitting (5) on fitting (6) installed on forward firewall assembly (7).

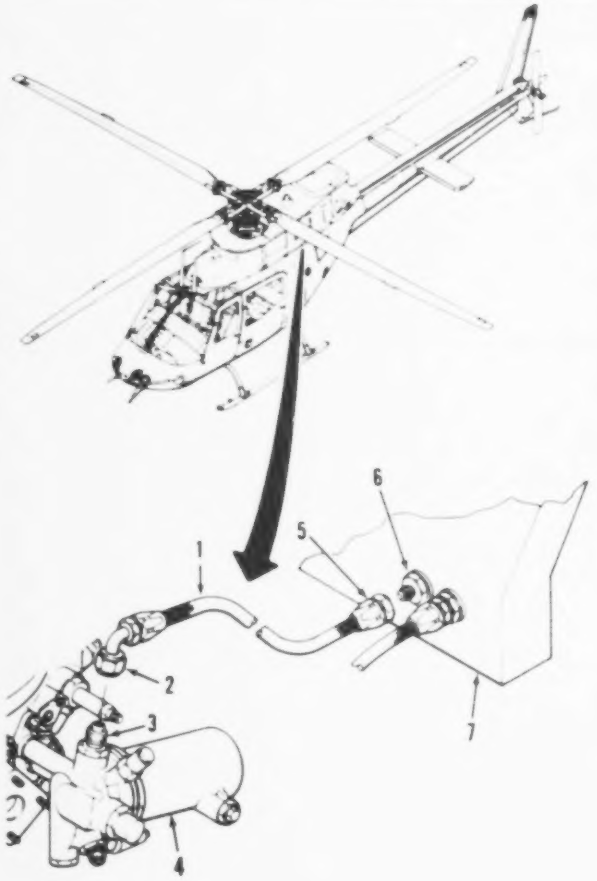
7. Close left induction cowling access door.

INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK



406040-1488

6-8-14. REMOVE/INSTALL OIL PRESSURE SWITCH

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Nut, Steel, Self-Locking
Packing

Materials:

Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

6-8-14 REMOVE/INSTALL OIL PRESSURE SWITCH (CONT)

REMOVE ELECTRICAL CONNECTOR

1 Gain access to pressure switch (1) through access door on left side of air induction cowling

2 Remove boot (2) from top of pressure switch (1) and slide down on wire of electrical connector (3)

3 Remove nut (4), washer (5), and electrical connector (3) from terminal (6) on pressure switch (1)

REMOVE PRESSURE SWITCH

4 Cut lockwire and remove pressure switch (1) with packing (7) from "T" fitting (8) Discard packing (7)

INSTALL PRESSURE SWITCH

WARNING

Lubricating oils (D2 or D3) are flammable and toxic They can irritate skin and cause paralysis if swallowed Use only in well-ventilated area, away from heat and open flame In case of contact, immediately flush skin If swallowed get medical aid

5 Install packing (7) on pressure switch (1) and lightly lubricate packing (7) with lubricant (D2 or D3)

6 Install pressure switch (1) with packing (7) on "T" fitting (8)

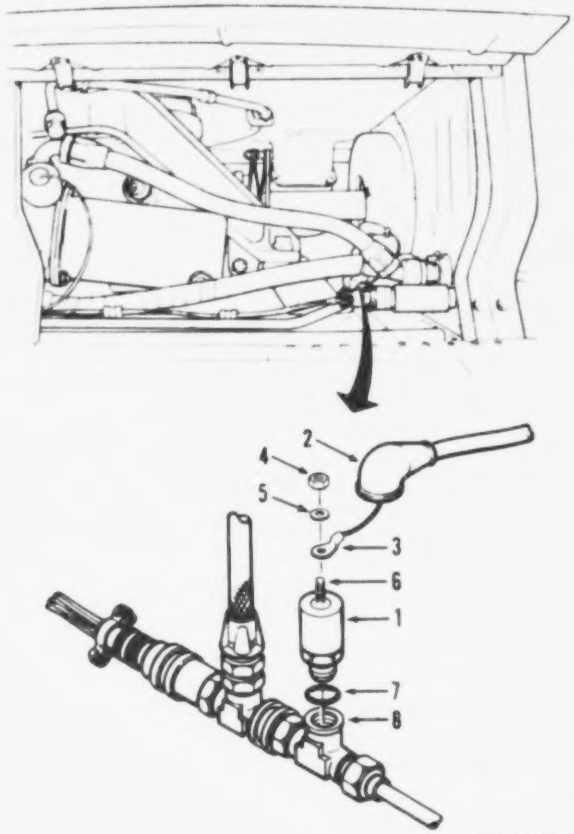
INSTALL ELECTRICAL CONNECTOR

7 Install electrical connector (3), washer (5), and nut (4) on terminal

INSTALL

8 Install boot (2) on terminal (6) of pressure switch (1)

9 Secure pressure switch (1) to "T" fitting (8) by double looping lockwire (D4) around "T" fitting (8), then twisting lockwire and pig tailing at oil pressure switch



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INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF)

END OF TASK

6-8-15. CLEAN, INSPECT, AND REPAIR OIL PRESSURE SWITCH

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rag (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean oil pressure switch using drycleaning solvent (D1) and a nonmetallic brush.

2. Dry oil pressure switch with a wiping rag (D53).

INSPECT

NOTE

Part not meeting inspection requirements should be rejected.

3. Inspect oil pressure switch for leakage and thread damage.

REPAIR

4. Nonreparable oil pressure switch, replace if damaged (Task 6-8-14).

END OF TASK

6-8-16. REMOVE/INSTALL OIL PRESSURE TRANSDUCER

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packing

Materials:

Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1500-204-25/1
TM 55-1520-248-MTF

GO TO NEXT PAGE

6-8-16 REMOVE/INSTALL OIL PRESSURE TRANSDUCER (CONT)

REMOVE

1 Gain access to oil pressure transducer through access door on left side of air induction cowling

2 Disconnect electrical connector (1) from oil pressure transducer (2)

3 Remove screw (3), washer (4), and spacer (5) from clamp (6) supporting oil pressure transducer (2) on cabin roof (7)

4 Remove clamp (6) from oil pressure transducer (2)

5 Cut lockwire and remove oil pressure transducer (2) with packing (8) from "T" fitting (9) Discard packing (8)

INSTALL

WARNING

> Lubricating oils (D2 or D3) are flammable and toxic They can irritate skin and cause paralysis if swallowed Use only in well-ventilated area, away from heat and open flame In case of contact, immediately flush skin If swallowed get medical aid

6 Install packing (8) on oil pressure transducer (2) and lightly lubricate packing (8) with lubricant (D2 or D3)

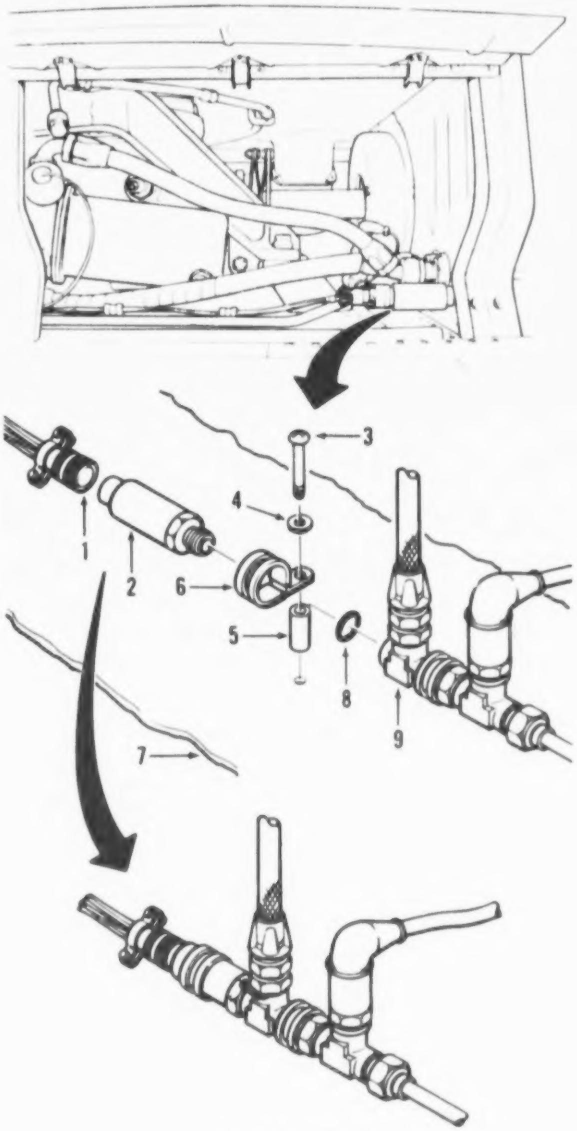
7 Install oil pressure transducer (2) on "T" fitting (9)

8 Install clamp (6) on oil pressure transducer (2) and secure to cabin roof (7) with screw (3), washer (4), and spacer (5)

9 Connect electrical connector (1) to oil pressure transducer (2)

10 Secure oil pressure transducer (2) to "T" fitting (9) by double looping lockwire (D4) around "T" fitting (9) then twisting lockwire and pig tailing off at oil pressure transducer (2)

11 Repair electrical wiring in accordance with TM 55-1500-204-25/1



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INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF)

END OF TASK

6-8-17. CLEAN, INSPECT, AND REPAIR OIL PRESSURE TRANSDUCER

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rag (D53)
Abrasive Mats (D24)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 55-1500-204-25/1
TM 43-0105

GO TO NEXT PAGE

6-8-17 CLEAN, INSPECT, AND REPAIR OIL PRESSURE TRANSDUCER (CONT)

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean oil pressure transducer (1) with drycleaning solvent (D1) using a nonmetallic brush.

2. Dry oil pressure transducer (1) with a wiping rag (D53).

INSPECT

3. Inspect oil pressure transducer (1) for minor nicks, scratches, and corrosion in accordance with TM 43-0105.

4. Inspect oil pressure transducer (1) for cracks and thread damage.

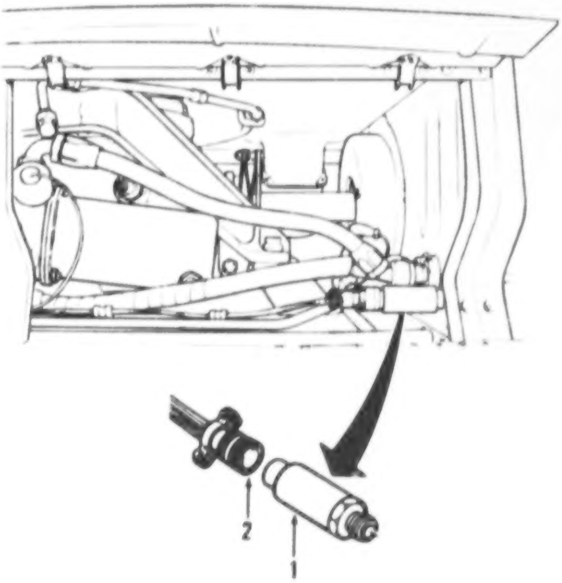
5. Inspect electrical connector (2) for bent pins and corrosion in accordance with TM 43-0105.

REPAIR

6. Remove minor nicks, scratches, and corrosion, with abrasive mats (D24).

7. Replace damaged oil pressure transducer (1) (Task 6-8-16).

8. Repair electrical wiring in accordance with TM 55-1500-204-25/1.



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END OF TASK

6-8-18 REMOVE/INSTALL OIL DRAIN VALVE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Open End Wrench 1 Inch
Suitable Oil Container

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer (2)

GO TO NEXT PAGE

6-8-18. REMOVE/INSTALL OIL DRAIN VALVE (CONT)

REMOVE

NOTE

Removal procedures are same for both oil drain valves.

1. Gain access to oil drain valve (1) through aft electrical compartment door.

WARNING

Lubricating oils (D2 or D3) are flammable and toxic. They can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

2. Turn drain valve selector (2) to on position and drain oil into suitable oil container.

3. Disconnect fitting (3) from lower end of oil drain valve (1).

4. Gain access to fitting (4) and locknut (5) on upper end of oil drain valve (1) through either access hole inside of aft electrical compartment or through access panel above aft electrical compartment.

5. Disconnect fitting (4) and locknut (5) from upper end of oil drain valve (1). Remove oil drain valve (1) from hole in rib.

INSTALL

6. Install oil drain valve (1) through hole in rib and secure with locknut (5).

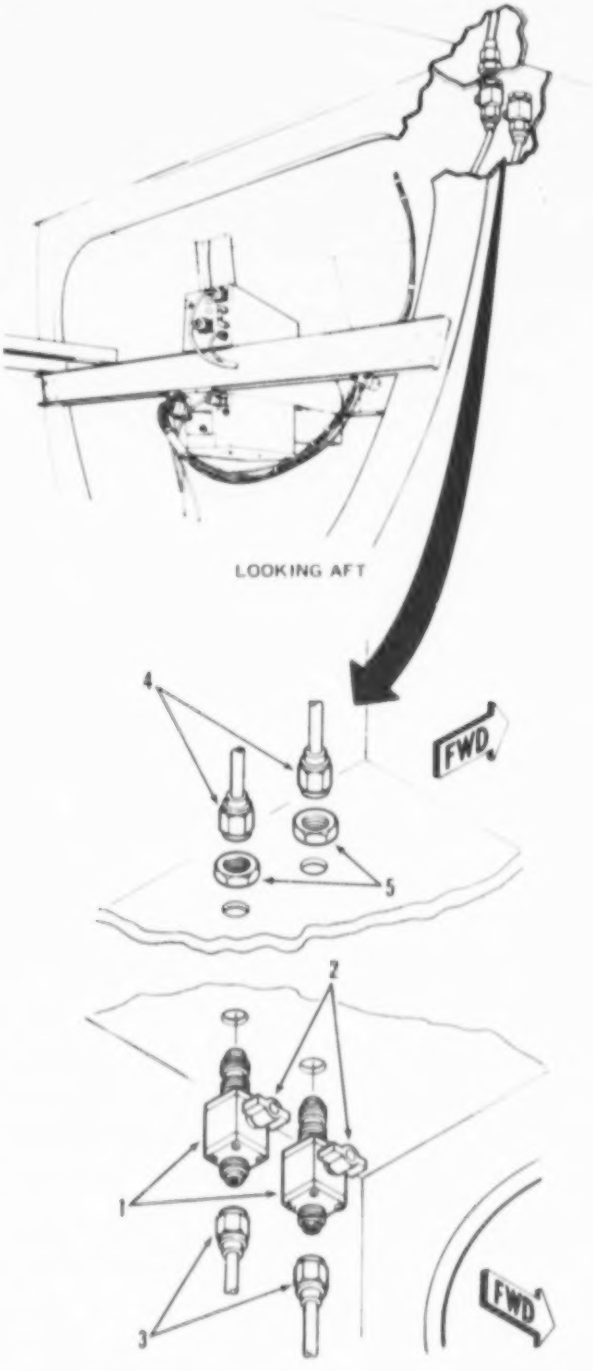
7. Connect fitting (4) to upper end of oil drain valve (1).

8. Connect fitting (3) to lower end of oil drain valve (1).

9. Service transmission oil system (Task 1-4-6).

INSPECT

END OF TASK



406040-154

6-8-19 CLEAN, INSPECT, AND REPAIR OIL DRAIN VALVE

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Nonmetallic Brush

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rag (D53)
Abrasive Mats (D24)

Personnel Required:

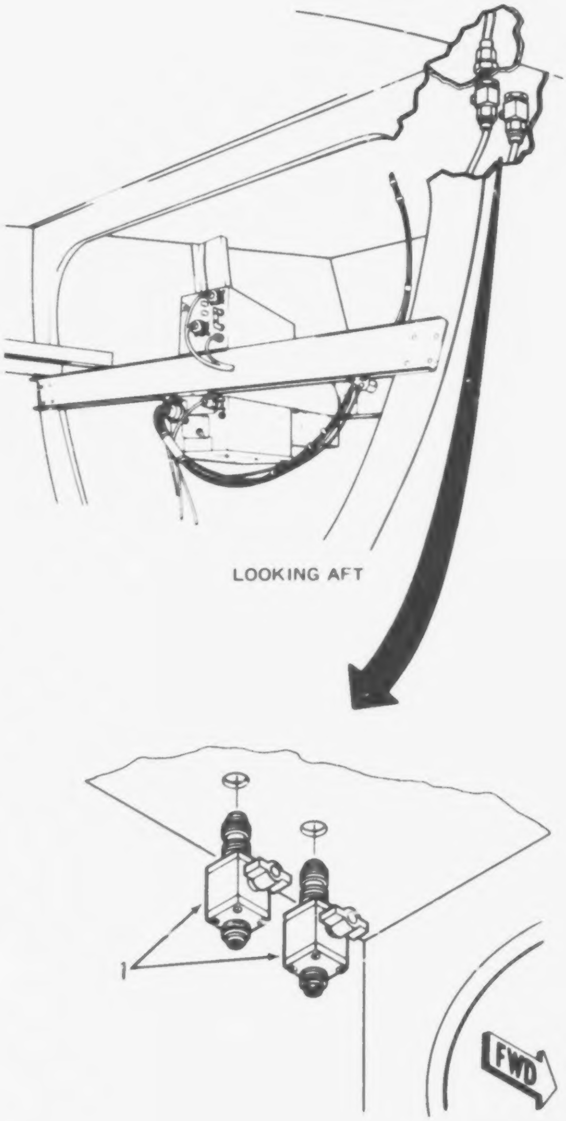
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0105

GO TO NEXT PAGE

6-8-19. CLEAN, INSPECT, AND REPAIR OIL DRAIN VALVE (CONT)



406040-276

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean oil drain valve (1) with drycleaning solvent (D1) using a nonmetallic brush.

2. Dry oil drain valve (1) with a wiping rag (D53).

INSPECT

3. Inspect oil drain valve (1) for minor nicks, scratches, and corrosion in accordance with TM 43-0105.

4. Inspect oil drain valve (1) for cracks and thread damage.

5. Inspect for external or internal leakage. No leakage allowed.

DAMAGE LIMITS

6. Nicks and scratches are permissible only if they do not interfere with mechanical actuation of the valves.

7. Cracks and damage to threaded areas are not permissible.

REPAIR

8. Remove minor nicks, scratches, and corrosion with abrasive mats (D24).

9. Replace damaged oil drain valve (1) (Task 6-8-18).

END OF TASK

6-8-20. REMOVE/INSTALL TEMPERATURE CONTROL VALVE (ENGINE OIL SYSTEM)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Socket 1-1/8 Inch
Thermometer, -20 - 110 C

Parts:

Packing

Materials:

Lockwire (D4)
Lubricant (D2 or D3)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)

General Safety Instructions:

WARNING

Lubricating oils (D2 or D3) are flammable and toxic. They can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

GO TO NEXT PAGE

6-8-20 REMOVE/INSTALL TEMPERATURE CONTROL VALVE (ENGINE OIL SYSTEM) (CONT)

REMOVE

1. Cut lockwire and remove temperature control valve (1) with packing (2) from oil cooler (3). Discard packing (2).

TEST

WARNING

Hot water can burn skin, if contacted. If hot water burns skin, seek first aid.

2. Submerge temperature control valve (1) in water heated 68 to 74°C (155 to 165°F) for five minutes.

3. Remove temperature control valve (1) from water and measure length "A".

4. After taking first measurement submerge temperature control valve (1) in water heated 78 to 84°C (173 to 183°F) for five minutes.

5. Remove temperature control valve (1) from water and measure length "B".

6. The difference between measurement "A" and measurement "B" must be a minimum increase of 0.080 inch. Replace temperature control valve (1) if it does not meet minimum length increase required.

INSTALL

7. Lubricate packing (2) with lubricant (D2 or D3) and install packing (2) on temperature control valve (1).

8. Install temperature control valve (1) with packing (2) on oil cooler (3) and secure with lockwire (D4).

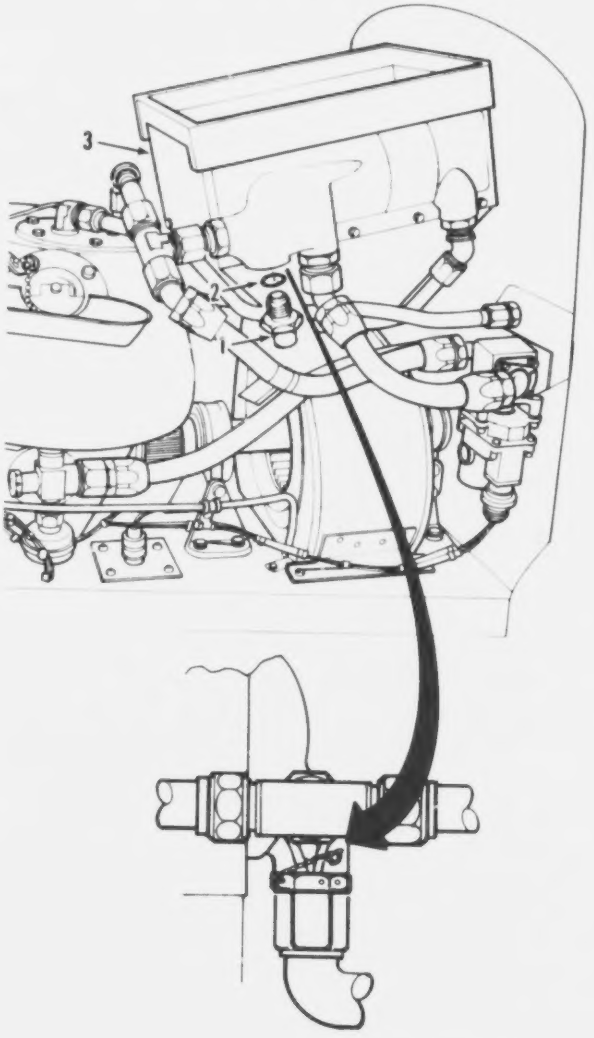
INSPECT

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF).

Install aft fairing assembly (Task 2-1-28).

END OF TASK



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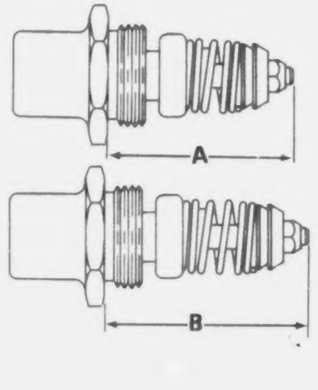

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6-8-21 CLEAN, INSPECT, AND REPAIR TEMPERATURE CONTROL VALVE (ENGINE OIL SYSTEM)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rags (D53)
Abrasive Mats (D24)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

References:

TM 43-0105

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

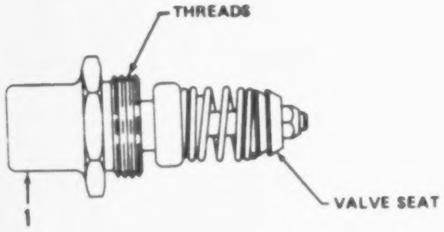
1. Clean temperature control valve (1) with drycleaning solvent (D1).

2. Dry temperature control valve (1) with a wiping rag (D53).

INSPECT

3. Inspect temperature control valve (1) for minor nicks, scratches, and corrosion in accordance with TM 43-0105. Nicks and scratches are allowed on all portions of the valve, except the threads and valve seat.

4. Inspect temperature control valve (1) for cracks.



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5. Inspect temperature control valve (1) for nicks and scratches on threads and valve seat.

REPAIR

6. Remove minor nicks, scratches, and corrosion with abrasive mats (D24).

7. Replace temperature control valve (1) if cracked and/or nicks and scratches appear on threads and valve seat.

END OF TASK

6-8-22. REMOVE OIL COOLER

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Wrench, Open End 1 Inch
Maintenance Platform

Materials:

Wiping Rag (D53)

Personnel Required:

67S Scout Helicopter Repairer

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)

General Safety Instructions:

WARNING

Lubricating oils (D2 or D3) are flammable and toxic. They can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area, away from heat and open flame. In case of contact, immediately flush skin. If swallowed, get medical aid.

CAUTION

Disconnected lines and fittings should be capped or plugged. If lines and fittings are not capped or plugged, contamination of oil system may result.

GO TO NEXT PAGE

6-8-22 REMOVE OIL COOLER (CONT)

REMOVE

NOTE

Wiping rags (D53) should be used to absorb spilled oil.

1. Disconnect transmission outlet oil line fitting (1) from oil cooler inlet fitting (2).

2. Disconnect engine inlet oil line fitting (3) from oil cooler inlet fitting (4).

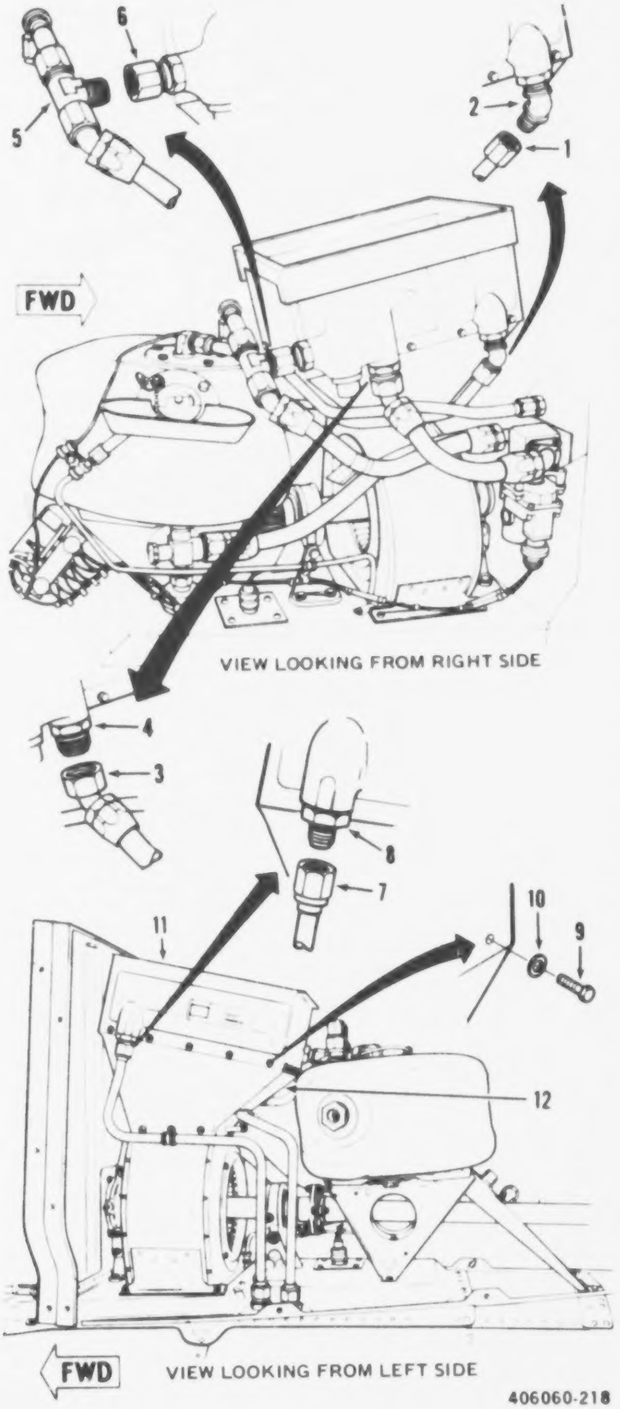
3. Disconnect engine oil tank bypass fitting (5) from engine oil check valve (6).

4. Disconnect transmission inlet line fitting (7) from oil cooler outlet fitting (8).

5. Remove 18 bolts (9) and 18 washers (10) from oil cooler (11).

6. Remove oil cooler (11) from transition duct (12).

7. Place oil cooler on suitable surface.



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END OF TASK

6-8-23. CLEAN, INSPECT, REPAIR, AND BUILD UP OIL COOLER

This task covers: Cleaning, Inspection, Repair, and Build Up (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Aircraft Mechanic Tool Kit
- Wrench, Open End 1-1/4 Inch
- Wrench, Open End 1-1/8 Inch

Parts:

- Seal (3)
- Packing (4)

Materials:

- Drycleaning Solvent (D1)
- Lubricant (D2 or D3)
- Adhesive (D99)
- Methyl-Ethyl-Ketone (D6)
- Rubber Gloves (D119)
- Lint-Free Cloth (D56)

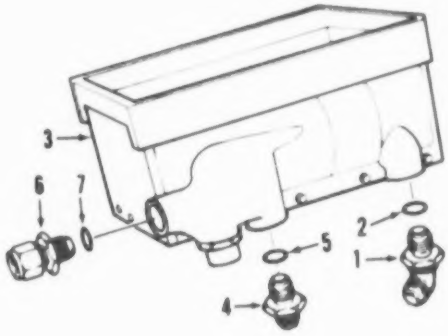
Personnel Required:

- 66S Scout Helicopter Technical Inspector
- 67S Scout Helicopter Repairer

GO TO NEXT PAGE

6-8-23 CLEAN, INSPECT, REPAIR, AND BUILD UP OIL COOLER (CONT)

REMOVE COMPONENTS



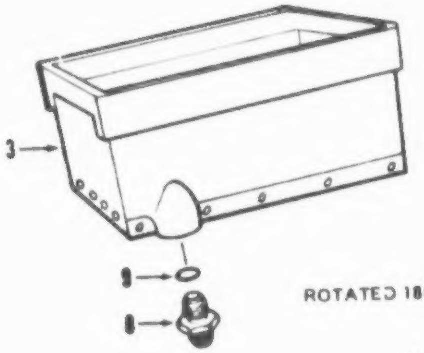
1. Remove transmission oil inlet fitting (1) with packing (2) from oil cooler (3). Discard packing (2).

2. Remove engine oil inlet fitting (4) with packing (5) from oil cooler (3). Discard packing (5).

3. Remove engine oil check valve (6) with packing (7) from oil cooler (3). Discard packing (7).

4. Remove transmission oil outlet fitting (8) and packing (9). Discard packing (9).

CLEAN



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CAUTION

Do not attempt to clean an oil cooler which has been installed with an engine which incurred mechanical failure resulting in metal particles in the oil. Condemn oil coolers which have been contaminated with metal particles.

NOTE

Do not confuse AOAP laboratory high wear concentration of iron, magnesium, ect., (measured in parts per million) as being metal chip contamination or metal particle contamination.

5. Install plugs in inlet and outlet ports of oil cooler.

GO TO NEXT PAGE

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

6. Clean the exterior of the oil cooler with drycleaning solvent (D1).

INSPECT

7. Inspect oil cooler for cleanliness.

8. Inspect oil cooler for unserviceable or damaged fittings, oil passage leaks and elongated mount holes.

9. Inspect oil cooler seals for damage and security.

10. Inspect the air fins and air passages for distortion and foreign particles that may obstruct the air flow.

11. Inspect the cooler for damaged and bulged plates, cracked castings and flanges, broken welds and stripped threads.

12. Inspect for foreign matter inside cooler through open ports.

13. Inspect area around each port for scoring that could prevent packings from sealing.

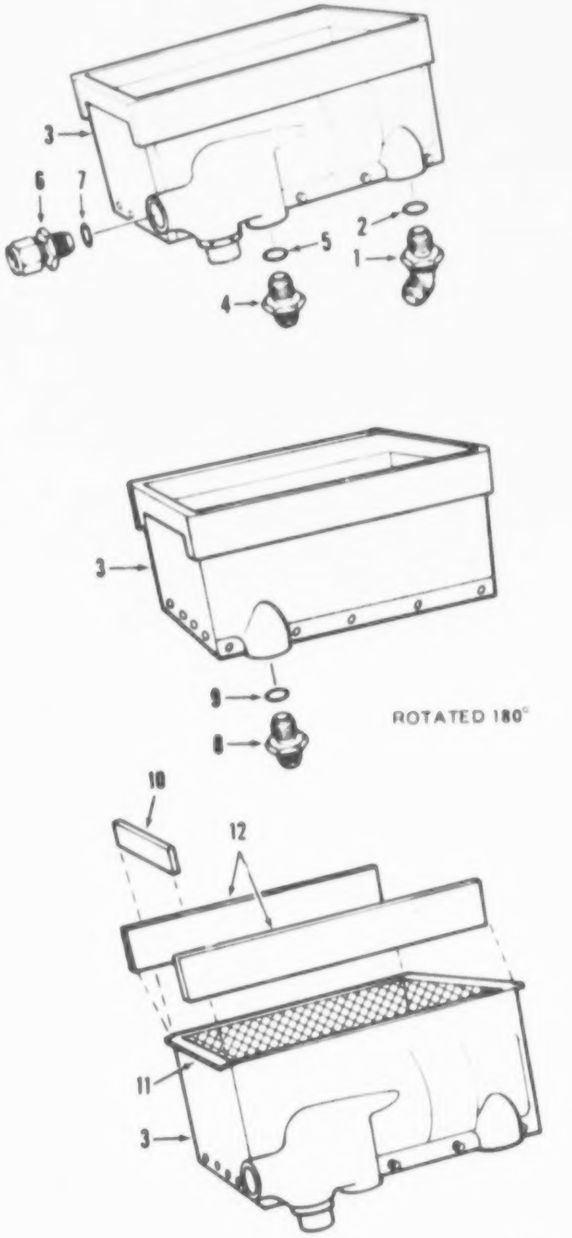
GO TO NEXT PAGE

6-8-23 CLEAN, INSPECT, REPAIR, AND BUILD UP OIL COOLER (CONT)

REPAIR

WARNING

Methyl-ethyl-ketone (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



14. Clean seal mating areas with MEK (D6).

15. Dry seal mating areas with a lint-free cloth (D56).

16. Install aft seal (10) on lip (11) of oil cooler (3) with adhesive (D99).

17. Install two seals (12) to left and right side of oil cooler (3) with adhesive (D99).

BUILDUP

NOTE

Packings should be lubricated with lubricant (D2 or D3) before installing.

18. Install transmission oil inlet fitting (1) with packing (2) on oil cooler (3).

19. Install engine oil inlet fitting (4) with packing (5) on oil cooler (3).

20. Install engine oil check valve (6) with packing (7) on oil cooler (3).

21. Install transmission oil outlet fitting (8) with packing (9) on oil cooler (3).

INSPECT

END OF TASK

6-8-24. INSTALL OIL COOLER

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Wrench, Open End, 1 Inch
Wrench, Open End, 1 1/4 Inch
Maintenance Platform

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)

General Safety Instructions:

WARNING

Lubricating oils (D2 or D3) are flammable and toxic. They can irritate skin and cause paralysis if swallowed. Use only in well-ventilated area away from heat and open flame. In case of contact immediately flush skin. If swallowed, get medical aid.

GO TO NEXT PAGE

6-8-24 INSTALL OIL COOLER (CONT)

1. Install oil cooler (1) on transition duct (2).

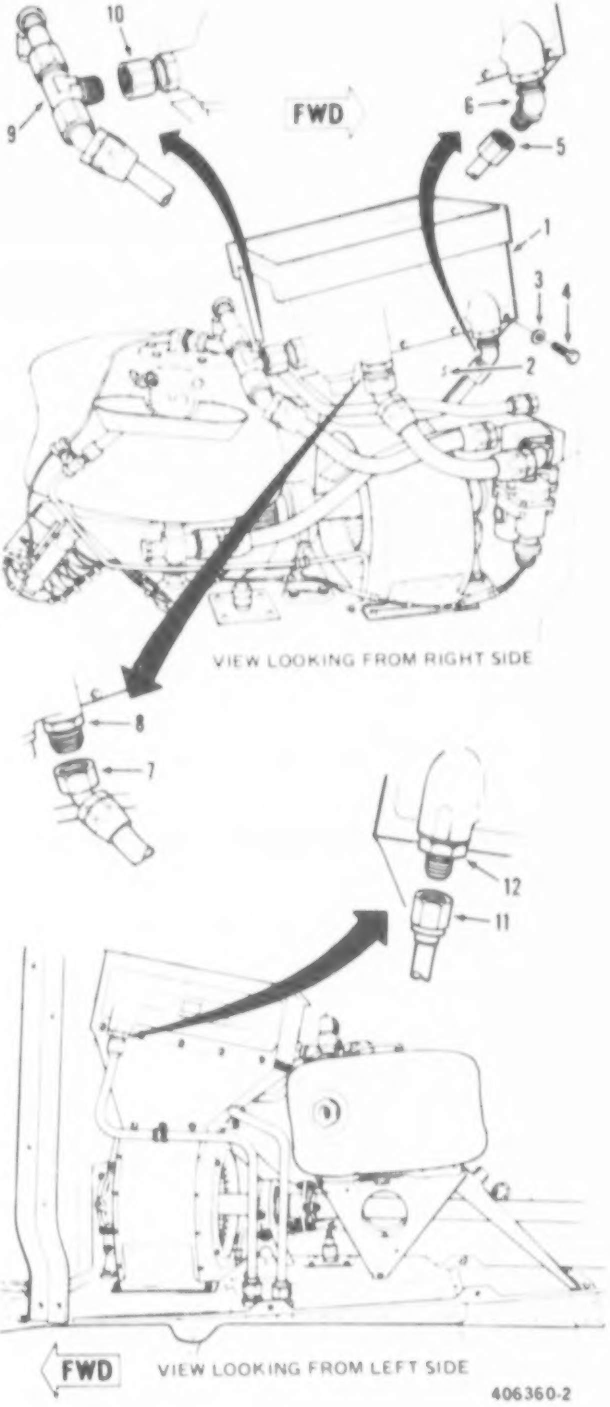
2. Install 18 washers (3) and 18 bolts (4) to secure oil cooler (1) to transition duct (2).

3. Connect transmission outlet oil line (5) to oil cooler inlet fitting (6).

4. Connect engine inlet oil line fitting (7) to oil cooler inlet fitting (8).

5. Connect engine oil tank bypass fitting (9) to engine oil check valve (10).

6. Connect transmission oil inlet line fitting (11) to oil cooler outlet fitting (12).



VIEW LOOKING FROM RIGHT SIDE

VIEW LOOKING FROM LEFT SIDE

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INSPECT

FOLLOW-ON MAINTENANCE

Service transmission oil system (Task 1-4-6)

Service engine oil system (Task 1-4-5)

Install aft fairing assembly (Task 2-1-28)

Pilot perform MOC (TM 55-1520-248-MTF)

CAUTION

Watch oil pressure; if low, shutdown engine immediately. Low oil pressure can cause damage to engine.

END OF TASK

6-8-25. REMOVE/INSTALL OIL COOLER DUCT

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

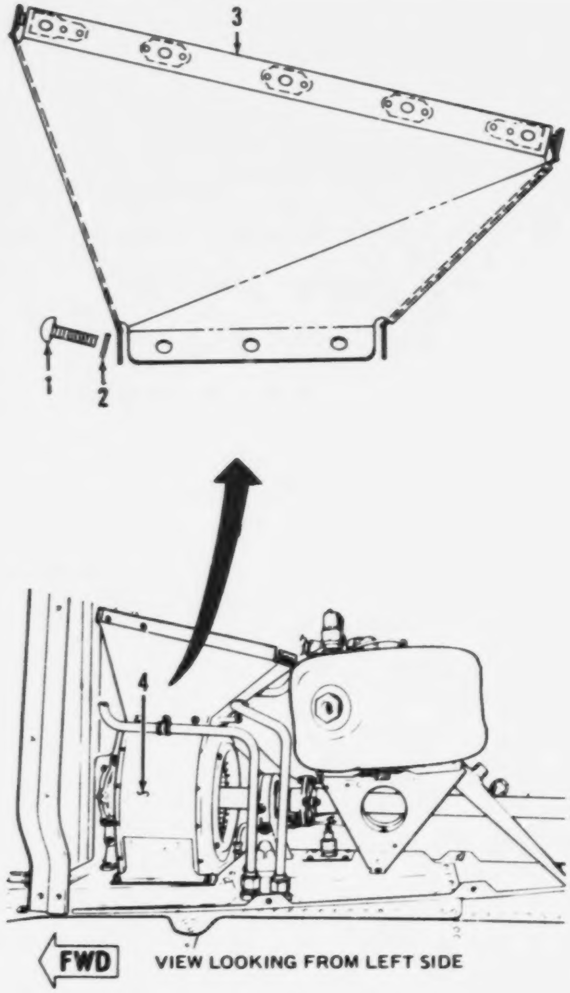
Aircraft Mechanic Tool Kit
Maintenance Platform

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

Equipment Condition:

Aft Fairing Assembly Removed (Task 2-1-28)
Oil Cooler Removed (Task 6-8-22)



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REMOVE

1. Remove 10 screws (1) and 10 washers (2) from oil cooler duct (3).

2. Remove oil cooler duct (3) from oil cooler blower (4).

INSTALL

3. Position oil cooler duct (3) on oil cooler blower (4).

4. Align screw holes on the oil cooler duct (1) with oil cooler blower (4).

5. Install washers (2) and screws (1).

INSPECT

FOLLOW-ON MAINTENANCE

Install oil cooler (Task 6-8-24).

Service transmission oil system (Task 1-4-6).

Install aft fairing (Task 2-1-28).

Service engine oil system (Task 1-4-5).

END OF TASK

6-8-26. CLEAN, INSPECT, AND REPAIR OIL COOLER DUCT

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations

All

Tools

Aircraft Mechanic Tool Kit

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)

Personnel Required

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

GO TO NEXT PAGE

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6-8-26. CLEAN, INSPECT, AND REPAIR OIL COOLER DUCT (CONT)

CLEAN

WARNING

> Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean oil cooler duct with solvent (D1) and wiping rag (D53).

2. Dry with wiping rags (D53).

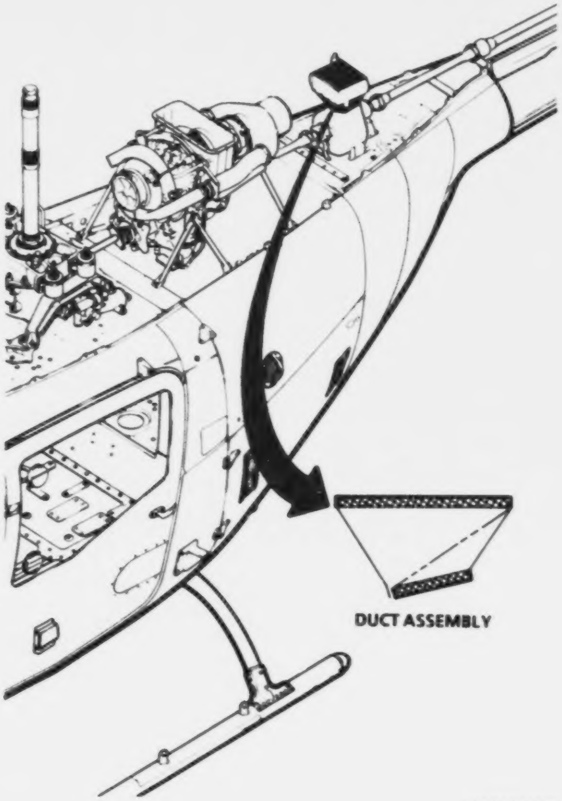
INSPECT

3. Inspect oil cooler duct for cracks, dents, and other damaged areas.

4. Inspect oil cooler duct to limits as shown. Replace if limits are exceeded.

REPAIR

5. Repair damage on oil cooler duct to limits shown.



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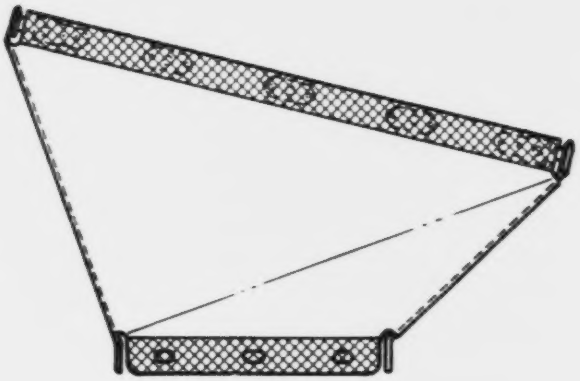
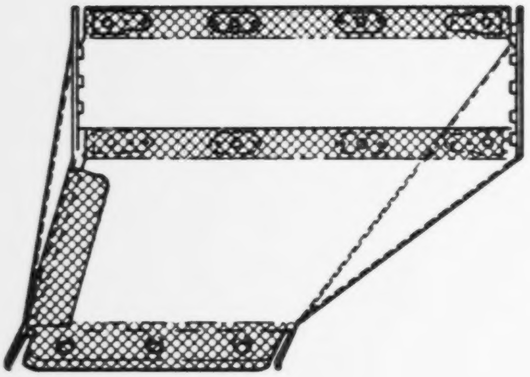
INSPECT

GO TO NEXT PAGE

6-8-26. CLEAN, INSPECT, AND REPAIR OIL COOLER DUCT (CONT)





TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.004 in. before and after repair 0.008	0.010 in. before and after repair 0.015
CORROSION	0.004 in. before and 0.008 after repair	0.008 in. before and 0.015 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.15 sq. in.	0.30 sq. in.
NUMBER OF REPAIRS		
EDGE CHAMFER TO REMOVE DAMAGE	0.005 in.	0.010 in.
BORES	0.004 in. for 1/4 circumference	

NOTES:

1. No cracks are permitted.

406060-346

END OF TASK

CHAPTER 7

HYDRAULIC SYSTEM

Section I Operational Check and Troubleshooting 7-1
Section II Hydraulic System Bleeding 7-11
Section III Hydraulic Filter Assemblies 7-14
Section IV Hydraulic Hoses, Lines, Fittings and Quick-Disconnects 7-22
Section V Pressure Switch, Manifolds and Relief Valve 7-34
Section VI Hydraulic Solenoid Valve 7-46
Section VII Hydraulic Reservoir 7-57
Section VIII Hydraulic Pump 7-73
Section IX Actuators 7-87

Section I. OPERATIONAL CHECK AND TROUBLESHOOTING

This section consists of procedures for performing an operational check and troubleshooting the hydraulic system.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Operational Check	7-1-1	7-2

TROUBLESHOOTING HYDRAULIC SYSTEM

When a particular symptom is found, verify that the symptom is present before proceeding with the troubleshooting procedure and resulting repair action. This precludes unnecessary maintenance in the event an erroneous symptom occurred.

Under certain circumstances, a fault may be exhibited during the operational check with the troubleshooting and repair logic for that fault in another task. Also, some logic trees refer to other tasks for continuation of the fault, rerun the operational check in which the fault first appeared.

Troubleshooting procedures for the hydraulic system are contained in Appendix K, Section II.

7-1-1. OPERATIONAL CHECK

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
APU
Test Stand, Portable Hydraulics

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

PREPARATION

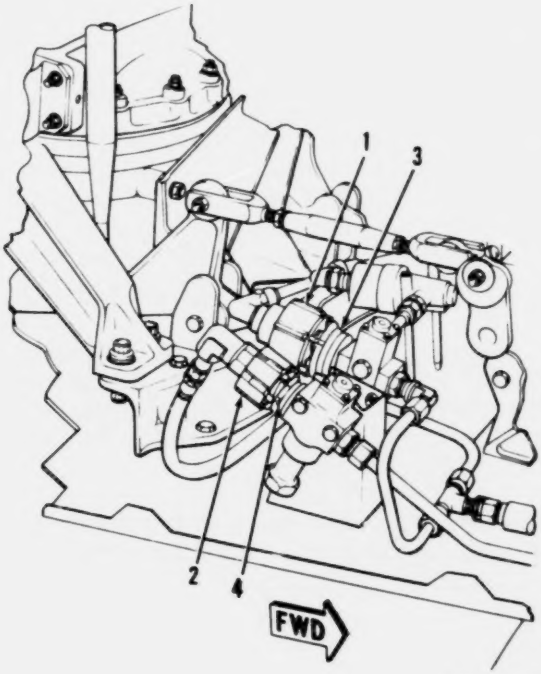
1. Prepare for operational check as follows:

NOTE

A complete visual inspection of the hydraulic system shall be accomplished before the operational check is performed to ensure that all components and lines are secure and appear capable of satisfactory operation.

a. Disconnect hose quick-disconnect halves (1 and 2). Cap halves.

b. Connect hydraulic test stand to filter assembly quick-disconnect halves (3 and 4).



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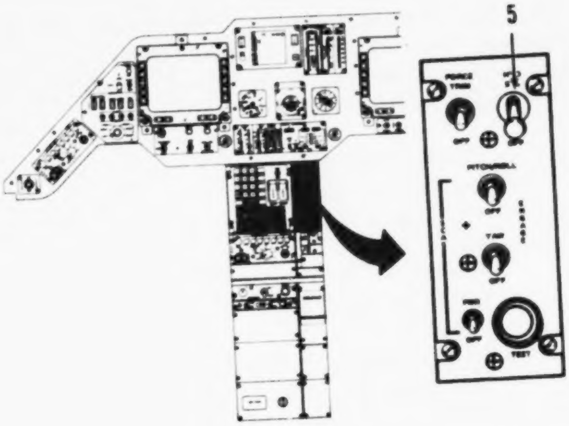
7-1-1. OPERATIONAL CHECK (CONT)

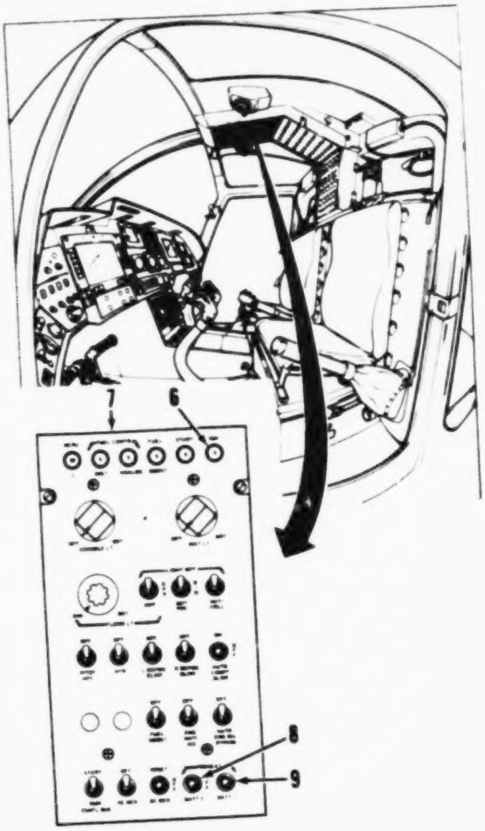
c. Set hydraulic system switch (5) to HYD SYS on SCAS panel.

d. Open IGN circuit breaker (6) on forward overhead console (7).

e. Set BATT 1 switch (8) to OFF and BATT 2 switch (9) to OFF.

f. Apply electrical power to helicopter with APU (Task 9-3-10).





FORWARD
OVERHEAD
CONSOLE PANEL

406075-377A

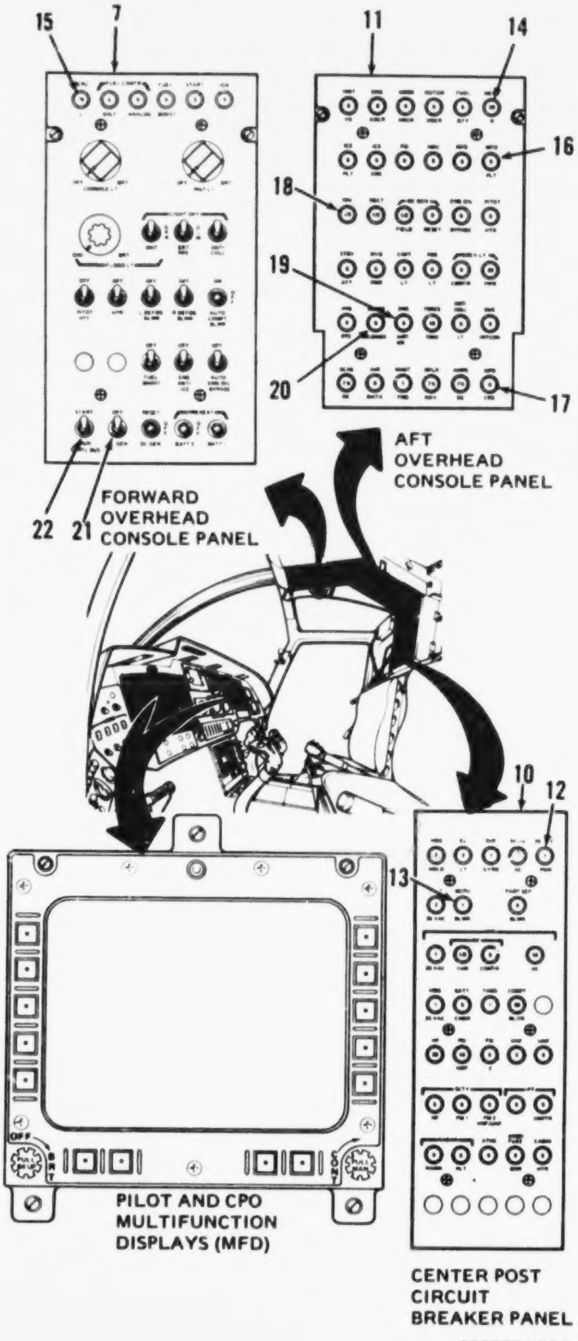
GO TO NEXT PAGE

7-1-1. OPERATIONAL CHECK (CONT)

2. On center post circuit breaker panel (10), aft overhead console circuit breaker panel (11), and forward overhead console panel (7), close the following circuit breakers:

26 VAC PWR (12)
MCPU BLWR (13)
MCPU R (14)
MCPU L (15)
MFD PLT (16)
MFD CPO (17)
INV (18)
FORCE TRIM (19)
HYD SYS (20)

3. On forward overhead console panel (7), set AC GEN switch (21) to OFF and ESNTL BUS switch (22) to RUN.


15
7
11
14
16
18
19
20
17
22
21
FORWARD OVERHEAD CONSOLE PANEL
AFT OVERHEAD CONSOLE PANEL
10
12
13
PILOT AND CPO MULTIFUNCTION DISPLAYS (MFD)
CENTER POST CIRCUIT BREAKER PANEL
OFF
BRT
CONT
406075-296A

GO TO NEXT PAGE

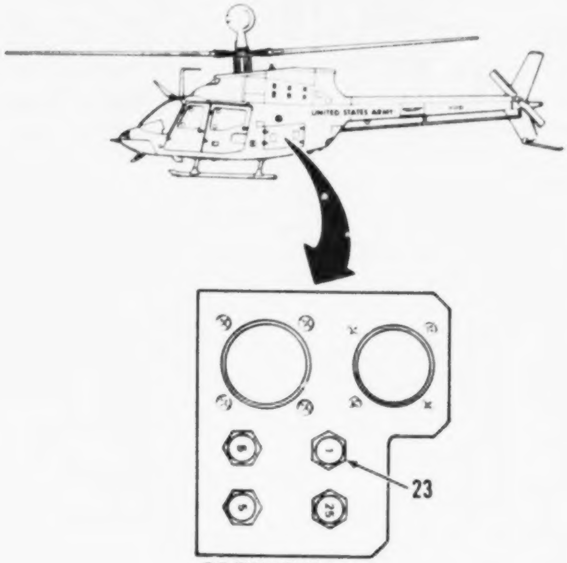
7-1-1. OPERATIONAL CHECK (CONT)

4. In aft electrical compartment, close CDS INV VOLT circuit breaker (23).

CHECK

5. Check for clearance by applying 1000 psig to hydraulic system and slowly cycling the cyclic, collective and directional controls to the stroke limit and observe movement of hydraulic servoactuators. Clearance between all moving parts shall be such that fouling of adjacent parts shall not occur. Particular attention shall be given to flexible connections to ensure that pinching does not occur and vibration does not loosen attached fittings.

6. Check for leakage throughout operational check. Observe all portions of system for evidence of external leakage. Leakage shall not exceed the allowable leakage rates specified in Table I.



DC EQUIPMENT ELECTRICAL ASSY

406075-2978

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7-1-1. OPERATIONAL CHECK (CONT)

Table I. Allowable leakage rates for hydraulic components

Component	Function	Leak type	Leakage Rate (Max)	
			In-Service Components	New Components (Prior to Flight)
Flight control Actuators	Rod seals	D	1 drop/20 full stroke cycles	1 drop/25 full stroke cycles
		S-D	1 drop/15 minutes	1 drop/15 minutes
	Static seals	S	2 drops/day	*None
	Valve input	D	1 drop/5 cycles	1 drop/25 cycles
		S-D	1 drop/5 minutes	1 drop/15 minutes
Pumps	Output shaft	D	8 drops/minute	1 drop/10 minutes
	Housing (mating)	S	2 drops/day	*None
Distribution system	Flareless fittings	S	*None	*None
	Hose fittings	S	*None	*None

*Leak shall be insufficient to form a drop

NOTES:

1. Leak types: D = Dynamic
   S = Static
   S-D = Static leakage through dynamic seal
2. Approximately 20 drops = 1 cubic centimeter
3. Components in static condition, as in parked aircraft, are allowed maximum leakage of two drops per seal or packing per day.

406947-1

GO TO NEXT PAGE

7-1-1. OPERATIONAL CHECK (CONT)

7. On pilot auxiliary panel (24) press INIT button (25).

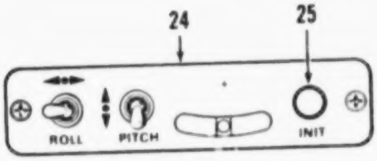
8. Observe that initial page (26) appears.

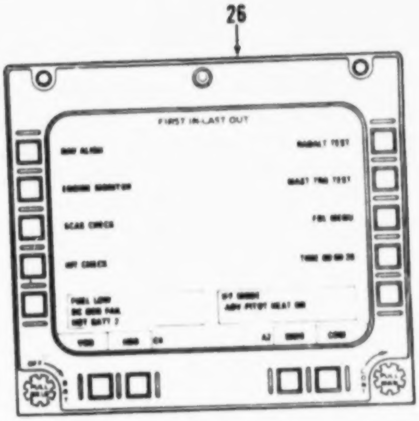
9. Check for low pressure warning indication by gradually decreasing pressure to the hydraulic system.

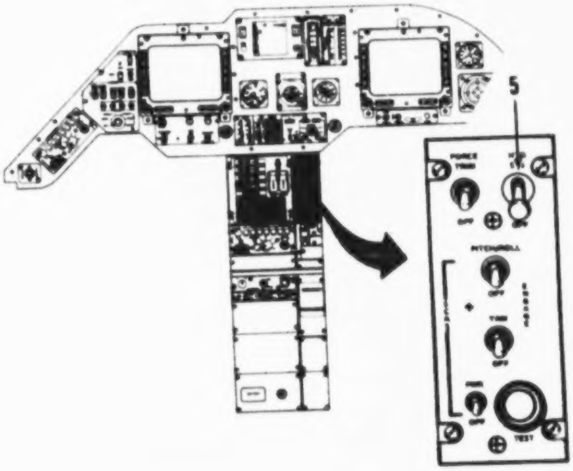
a. With pressure gradually decreasing, the LOW HYD PRESS indication should appear on MFD at 500 ± 100 psig.

b. With pressure increasing, the LOW HYD PRESS indication should cease at 800 ± 100 psig.

10. Check solenoid valve by operating system pressure at 1000 ± 50 psig. Energize the HYD SYS OFF switch (5) by turning hydraulic control switch to the OFF position. The LOW HYD PRESS indication appears on MFD. Cycle the cyclic, collective, and directional controls; they should require more force to operate. Identify and open HYD SYS circuit breaker (20). Hydraulic pressure should return to the system. Place the hydraulic control switch to ON position. The LOW HYD PRESS indication should cease and the controls should operate more easily. Close HYD SYS circuit breaker (20).







406075-140B

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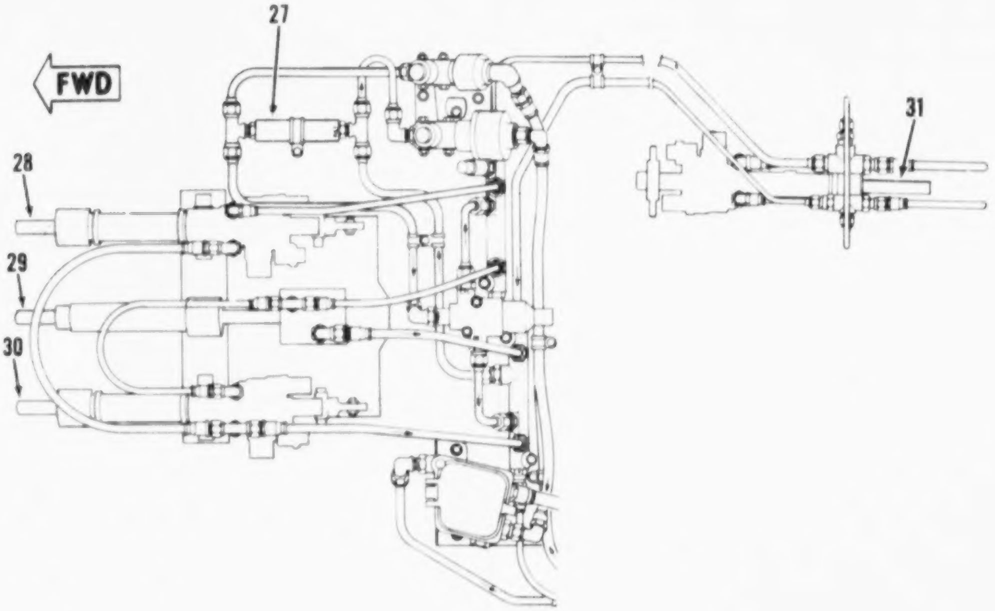
7-1-1. OPERATIONAL CHECK (CONT)

11. Check relief valve (27) by gradually increasing pressure to check system relief valve cracking pressure. This may be determined by touching a screwdriver to the valve assembly and listening for the relief valve to open and close. The valve should crack between 1075 and 1375 psig. The valve should reseat at 1075 psig.

12. Check the servoactuators (28, 29, 30 and 31) by starting at zero psig; increase hydraulic pressure until it can be determined that the control system is functioning with hydraulic power. This should occur between 100 and 188 psig. Both cyclic and collective control should be cycled to determine if this requirement is met on all cylinders. Reduce pressure to zero psig. Check the servoactuators for irreversibility by grasping the rod end of the power cylinders and pushing or pulling with approximately 50 pounds force. The piston rod should not move.



406076-53B

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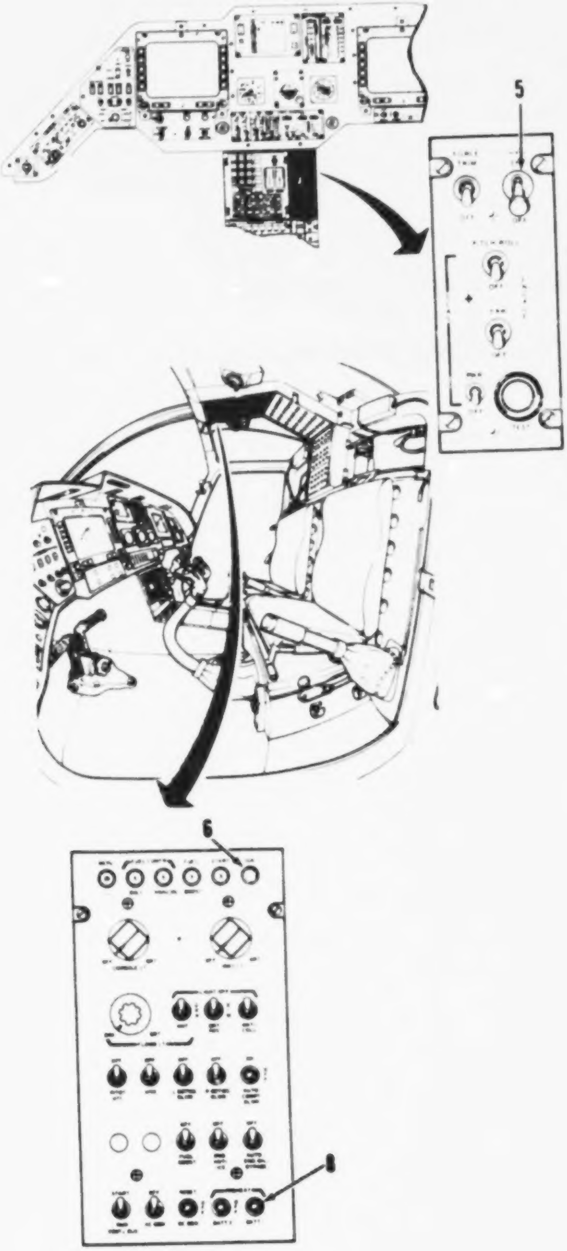
7-1-1. OPERATIONAL CHECK (CONT)

RESTORE HELICOPTER TO FLIGHT CONFIGURATION

13. Set HYD SYS switch (5) to OFF.
14. Close IGN circuit breaker (6).
15. Disconnect APU (Task 9-3-10).
16. Set BATT 1 switch (8) to OFF.


5
6
8
FORWARD
OVERHEAD
CONSOLE PANEL
406075-408

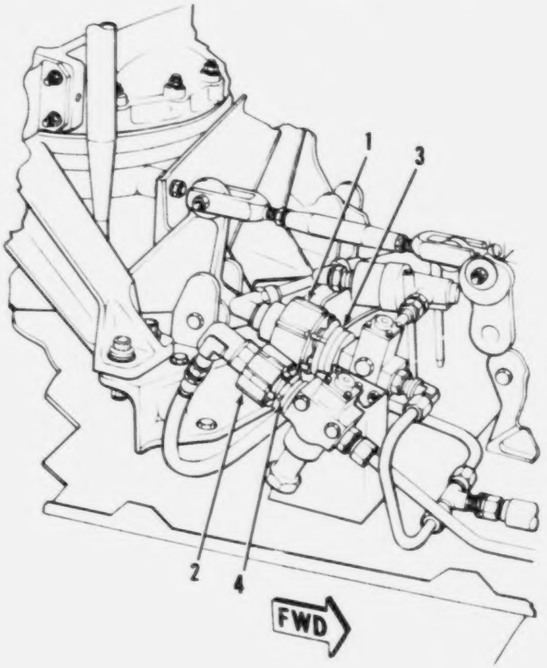
GO TO NEXT PAGE

7-1-1. OPERATIONAL CHECK (CONT)

17. Disconnect hydraulic test stand from filter assembly quick-disconnect halves (3 and 4).

18. Remove caps and connect quick-disconnect halves (1 and 2) to quick-disconnect halves (3 and 4).

19. Clean area using wiping rags (D53).



406076-10

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21).

END OF TASK

Section II. HYDRAULIC SYSTEM BLEEDING

This section consists of using hydraulic test stand to bleed air from the hydraulic system.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Bleed Hydraulic System	7-2-1	7-12

7-2-1. BLEED HYDRAULIC SYSTEM

This task covers: Bleeding (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Test Stand, Portable Hydraulics
APU

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

1. Move maintenance platform in position to gain access to right side of roof forward of the transmission.

2. Connect APU (Task 9-3-10).

NOTE

> The hydraulic test stand must be thoroughly cleaned and serviced with the required hydraulic fluid for helicopter being serviced.

3. Disconnect hose couplings (1 and 2).

4. Connect the hydraulic test stand to quick-disconnect couplings halves (3 and 4) located on right side of helicopter roof at hydraulic filters.

5. Visually inspect the complete hydraulic system before turning on hydraulic test stand to ensure all components and lines are securely attached.

6. Set the hydraulic test stand to provide a flow rate of 3.0 ± 1/2 GPM with the pressure compensator adjusted to 1000 psig and maintain for a minimum of 15 minutes. Bleed, leakage and clearance checks shall be accomplished during this period.

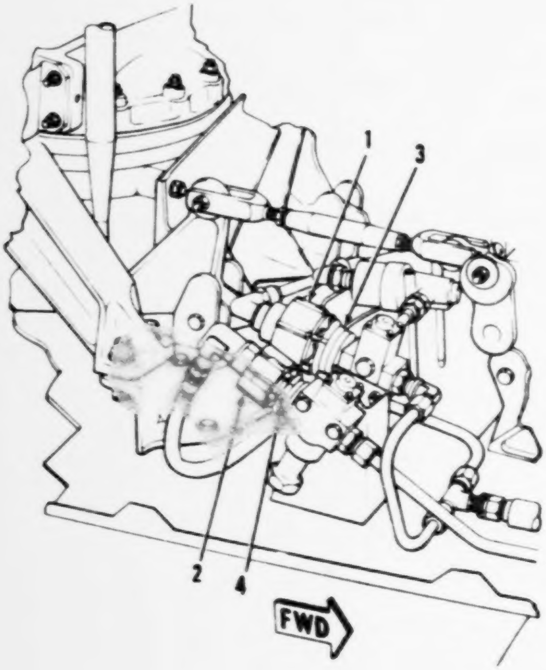
7. Rapidly cycle the cyclic collective and directional actuators through their full strokes a minimum of 10 times to bleed air from system.

8. Perform operational check (Task 7-1-1).

9. Reduce pressure to zero psig and disconnect the hydraulic test stand.

10. Connect helicopter hose couplings (1 and 2) to coupling halves (3 and 4).

11. Disconnect APU (Task 9-3-10).



INSPECT

SERVICE

12. Service reservoir (Task 1-4-8).

13. Clean area with wiping rags (D53).

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

Section III. HYDRAULIC FILTER ASSEMBLIES

This section consists of removal, cleaning, inspection, repair, and installation of hydraulic filter assemblies and replacement of filter elements.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove, Clean, Inspect, Repair, and Install Hydraulic Filter Assembly	7-3-1	7-15
Replace Filter Elements	7-3-2	7-19

7-3-1. REMOVE, CLEAN, INSPECT, REPAIR AND INSTALL HYDRAULIC FILTER ASSEMBLY

This task covers: Removal, Cleaning, Inspection, Repairing and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Materials:

Rubber Gloves (D119)
Hydraulic Fluid (D35)
Wiping Rags (D53)
Drycleaning Solvent (D1)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-3-1. REMOVE, CLEAN, INSPECT, REPAIR AND INSTALL HYDRAULIC FILTER ASSEMBLY (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof, forward of transmission.

NOTE

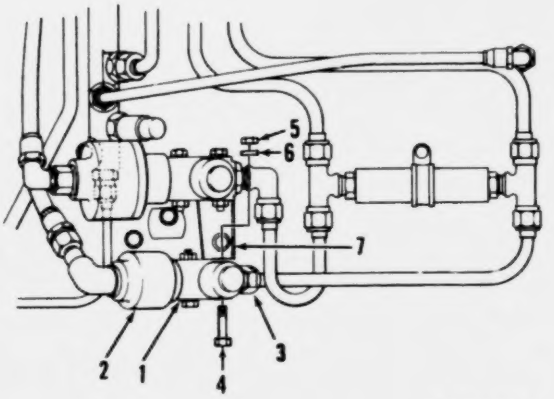
There are two filter element assemblies in the hydraulic system. One is located in the pressure line and one in the return line. Maintenance procedures are the same for both.

2. Place wiping rags (D53) under filter assembly (1) to catch hydraulic fluid.

3. Disconnect quick-disconnect (2) aft of filter assembly (1) and cap line.

4. Disconnect hydraulic line (3) forward of filter assembly (1) and cap line.

5. Remove two bolts (4), two nuts (5), and two washers (6), securing filter assembly to mounting bracket (7) and remove filter assembly from bracket.



406076-17A

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case oif contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

6. Clean filter assembly using one of the following:

   a. Drycleaning solvent (D1).

   b. Hydraulic fluid (D35).

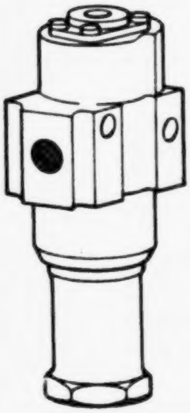
7. Back flush filter assembly during cleaning (inside to outside).

GO TO NEXT PAGE

7-3-1. REMOVE, CLEAN, INSPECT, REPAIR AND INSTALL HYDRAULIC FILTER ASSEMBLY (CONT)

INSPECT

8. Check threads and ports for damage.



DAMAGE/REPAIR CHART

TYPE OF DAMAGE	DAMAGE LOCATION SYMBOLS	
	▨	☐
	MAXIMUM DAMAGE AND REPAIR DEPTH	
MECHANICAL	0.010 In. before and after repair	0.020 In. before and after repair
CORROSION	0.005 In. before and 0.010 In. after repair	0.010 In. before and 0.020 In. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.125 Sq. In.	0.25 Sq. In.
NUMBERS OF REPAIRS	One	
EDGE CHAMFER TO REMOVE DAMAGE	N/A	0.030 X 45°
BORES	0.002 In. for 1/4 circumference	
INTERNAL THREADS	NONE	NONE

NOTE: No cracks are permitted.

406076-62A

GO TO NEXT PAGE

7-3-1. REMOVE, CLEAN, INSPECT, REPAIR AND INSTALL HYDRAULIC FILTER ASSEMBLY (CONT)

REPAIR

9. Replace filter assembly if inspection requirements are not met. Reset the red pop-out button by pressing down.

INSTALL

10. Position filter assembly (1) on mounting bracket (7) and install two bolts (4), two washers (6) and nuts (5).

11. Remove cap from line (3) and install line.

12. Remove cap and connect hydraulic quick-disconnect (2) to the aft side of filter assembly (1).

13. Remove wiping rags and clean area.

INSPECT

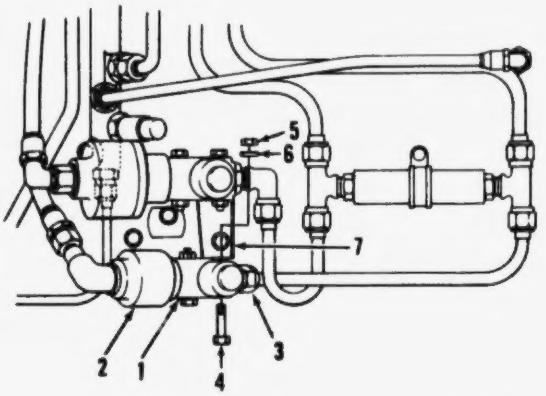
FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install transmission forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

7-3-2. REPLACE FILTER ELEMENTS

This task covers: Replacement (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

- Aircraft Mechanic Tool Kit
- Maintenance Platform
- Open End Wrench, One Inch
- Torque Wrench, 0-150 Inch-Pounds
- Crowfoot, One Inch

Parts:

- Retainer
- Packing (2)

Materials:

- Rubber Gloves (D119)
- Drycleaning Solvent (D1)
- Wiping Rags (D53)
- Lockwire (D4)
- Hydraulic Fluid (D35)

Personnel Required:

- 66S Scout Helicopter Technical Inspector
- 67S Scout Helicopter Repairer
- 68H Aircraft Pneudraulics Repairer
- Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

REMOVE

1. Move maintenance platform in position to gain access to the right side of roof forward of the transmission.

NOTE

There are two filter elements in the hydraulic system, one in the pressure line filter assembly and one in return line filter assembly. Remove/Install procedure is same for both. The bypass valve, located in return line filter assembly, prevents excessive pressure in the return system if the filter assembly beomes clogged.

GO TO NEXT PAGE

7-3-2. REPLACE FILTER ELEMENTS (CONT)

2. Cut lockwire on filter bowl (1). Remove filter bowl with element (2).

3. Press end of springs on element (2) to disengage from retention groove in filter bowl. Remove filter element with packing (3). Discard packing.

NOTE

After removal of element, do not remove retainer and packing inside filter assembly (4).

INSPECT

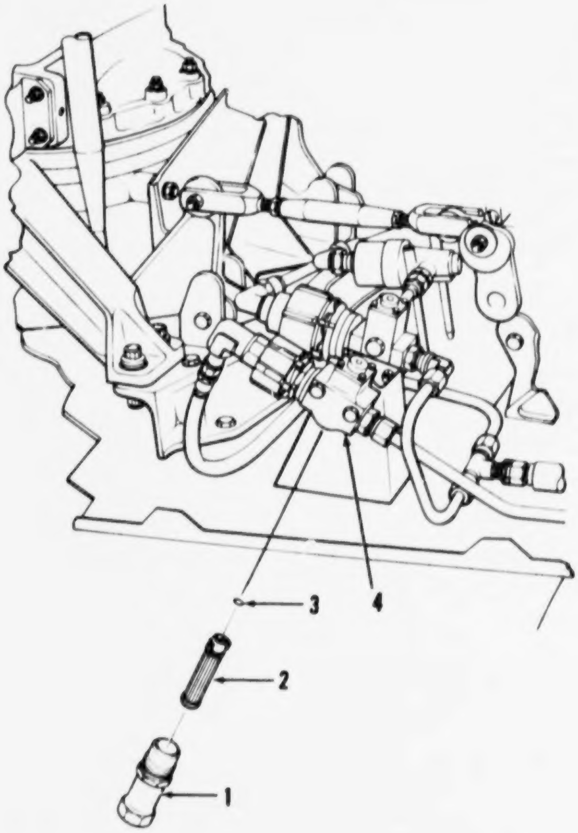
4. Check filter element (2) for contamination.

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

5. Clean element (2) by vigorous agitation in a container of drycleaning solvent (D1).

6. Inspect element visually for damage. If any defects are found on filtering surfaces or on sealing area, replace with new element.



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INSTALL

7. Lubricate all packings with hydraulic fluid (D35).

8. Install packing (3) (supplied with new element) on element (2).

9. Inspect springs on element for satisfactory condition to retain element in filter bowl (1).

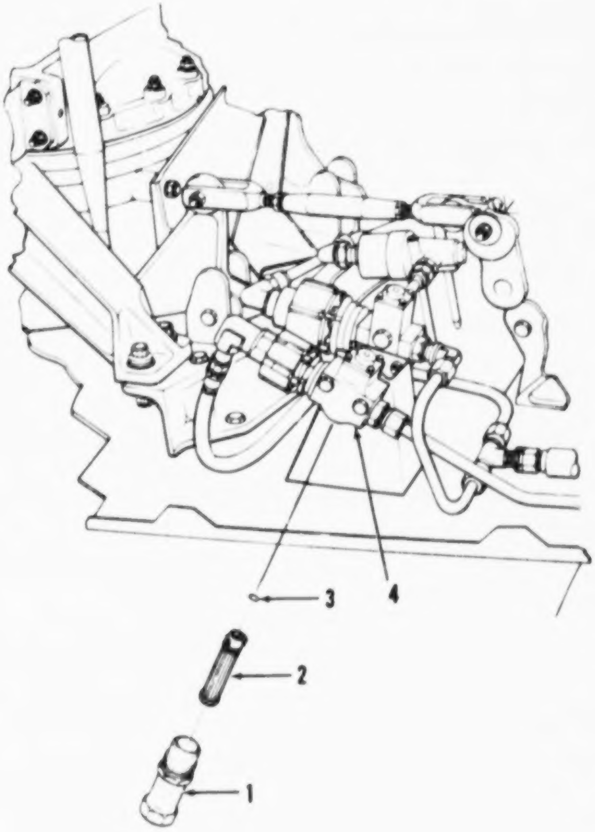
10. Fill filter bowls half full with hydraulic fluid (D35).

11. Insert element (2) in filter bowl (1) to ensure that springs will engage in retention groove.

12. Screw filter bowl (1) into body of filter assembly (4) and torque **20-60 INCH-POUNDS**.

13. Secure filter bowl (1) to filter assembly with lockwire (D4).

14. Wipe area clean with wiping rags (D53).



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INSPECT

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

Section IV. HYDRAULIC HOSES, LINES, FITTINGS AND QUICK-DISCONNECTS

This section consists of removal, cleaning, inspection, repair, and installation of hydraulic hoses, lines, tubes, quick-disconnects and fittings.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Rigid Tube Assembly (Typical)	7-4-1	7-23
Clean, Inspect and Repair Hydraulic System Tubing	7-4-2	7-25
Remove/Install Flex Hose (Typical)	7-4-3	7-26
Clean, Inspect and Repair Hydraulic Hoses	7-4-4	7-29
Remove/Install Tee, Retainer, Packing and Nut	7-4-5	7-30
Remove/Install Quick-Disconnect Self-Sealing Coupling Half (Typical)	7-4-6	7-32

7-4-1. REMOVE/INSTALL RIGID TUBE ASSEMBLY (TYPICAL)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Hydraulic Repairer Tool Kit
Maintenance Platform

Materials:

Wiping Rags (D53)

Personnal Required:

66S Scout Helicopter Technical Inspector Repairer
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

References:

TM 55-1520-248-MTF
TM 55-1520-248-23P

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

7-4-1. REMOVE/INSTALL RIGID TUBE ASSEMBLY (TYPICAL) (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of transmission.

2. Place rag (D53) under manifold (1) and tube (2) to absorb fluid.

3. Loosen fittings on each end of tube (2) and remove.

NOTE

> Removal and installation procedure is typical for all rigid tubing assemblies. Refer to TM 55-1520-248-23P for identification of replacement parts by part number.

INSTALL

4. Install tube (2).

5. Remove wiping rag (D53) and clean area.

INSPECT

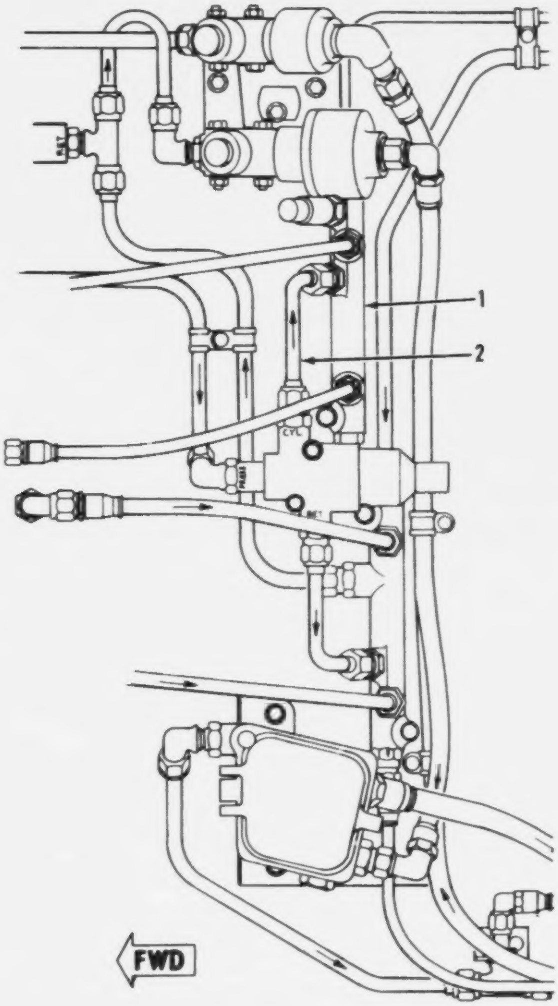
FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

7-4-2. CLEAN, INSPECT AND REPAIR HYDRAULIC SYSTEM TUBING

This task covers: Cleaning, Inspection and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Hydraulic Repairer Tool Kit
Pressure Tester

Parts:

Tubing
Flareless Fittings

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68H Aircraft Pneudraulics Repairer

References:

TM 55-1500-204-25/1
TM 55-1520-248-23P

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

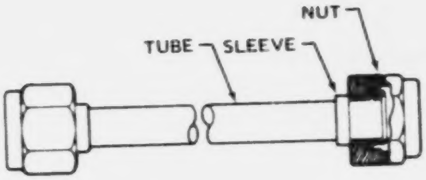
1. Clean tubing using drycleaning solvent (D1). Dry with wiping rag (D53).

INSPECT

2. Inspect tubing for nicks, dents and damaged threads.

REPAIR

3. No repair authorized. Make new replacement tubing per appropriate Appendix H number.



TYPICAL FLARELESS TUBE ASSEMBLY

406076-63

NOTE

Appendix H provides detailed fabrication instructions by part number for rigid tubing assemblies. Refer to TM 55-1520-248-23P for identification of replacement parts by part number.

4. Perform hydrostatic test with pressure tester in accordance with TM 55-1500-204-25/1.

END OF TASK

7-4-3. REMOVE/INSTALL FLEX HOSE (TYPICAL)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Hydraulic Repairer Tool Kit
Maintenance Platform
Suitable Container

Parts:

Packing

Materials:

Lockwire (D4)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Repairer
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

References:

TM 55-1520-248-MTF

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

7-4-3. REMOVE/INSTALL FLEX HOSE (TYPICAL) (CONT)

NOTE

This procedure is for removal of pressure hose. Procedures apply to all lines identified in figure.

REMOVE

1. Move maintenance platform/s in position to gain access to right and left side of roof forward of transmission.

2. Place suitable container under hydraulic reservoir (1).

3. Cut lockwire from drain plug (2). Remove plug (2) and packing (3) and drain reservoir. Discard packing (3).

4. Place wiping rag (D53) under hydraulic pump (4) to absorb fluid that leaks from suction line hose (5) or pressure hose (6).

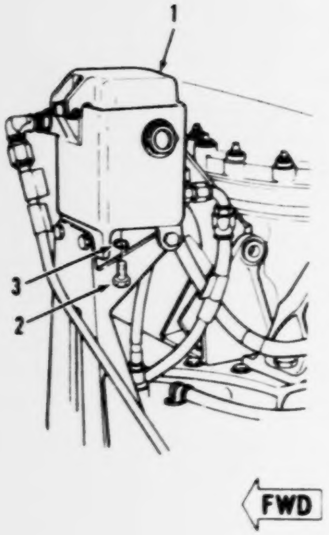
5. Remove suction hose (5) from pump (4) and reservoir (1).

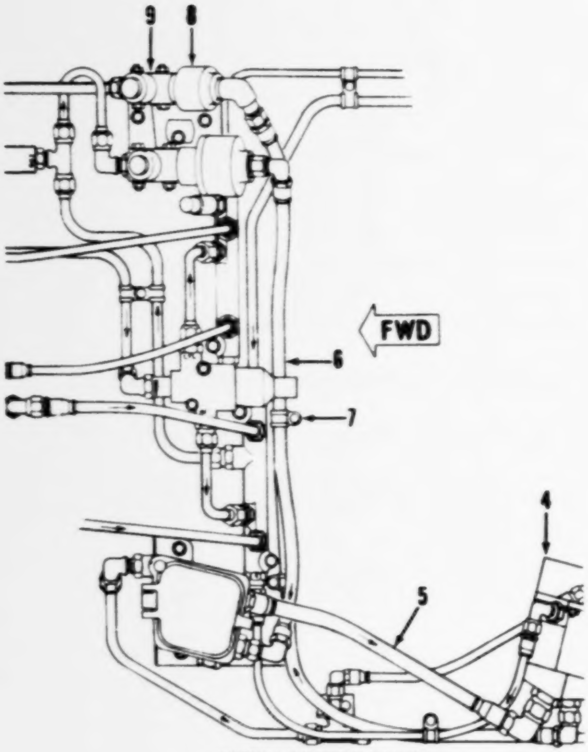
6. Remove butterfly clamp (7) from pressure hose (6).

7. Disconnect quick-disconnect (8) from filter assembly (9).

8. Remove quick-disconnect (8) from pressure hose (6).

9. Remove pressure hose (6) from pump (4).





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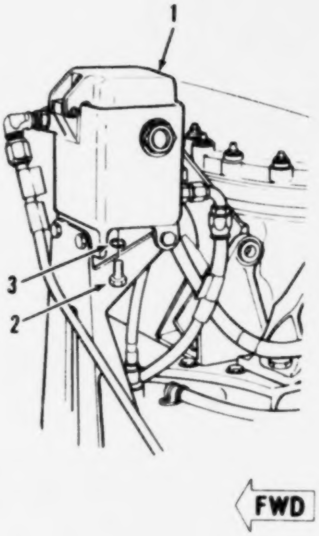
7-4-3. REMOVE/INSTALL FLEX HOSE (TYPICAL) (CONT)



CAUTION

Hose routing must be followed as shown in figure. Ensure clamps are positioned correctly and tightened.

INSTALL

10. Install quick-disconnect (8) on pressure hose (6).

11. Position pressure hose (6) on deck and install to pump (4).

12. Connect quick-disconnect (8) to filter assembly (9).

13. Install clamp (7).

14. Install suction hose (5) to pump (4) and reservoir (1).

15. Install drain plug (2) and new packing (3) and lockwire (D4).

16. Remove wiping rags and clean area.

INSPECT

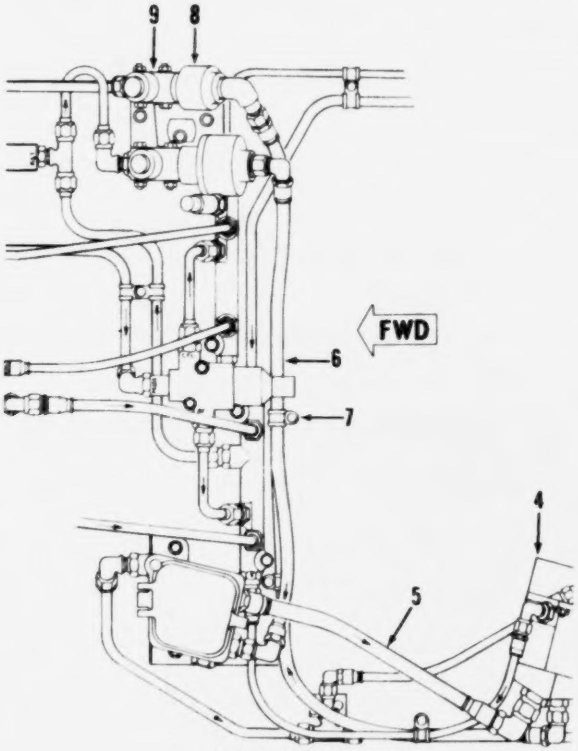
FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

7-4-4. CLEAN, INSPECT AND REPAIR HYDRAULIC HOSES

This task covers: Cleaning, Inspection and Repairing (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Hydraulic Repairer Tool Kit

Parts:

Hose
Hose Fittings

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68H Aircraft Pneudraulics Repairer

References:

TM 55-1500-204-25/1
TM 55-1520-248-23P

CLEAN

WARNING

Drycleaning solvent (D1), is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

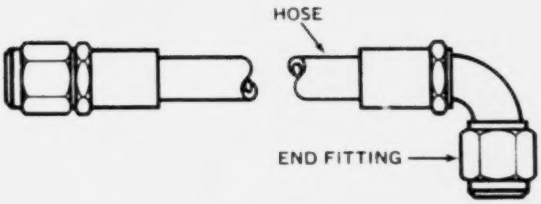
1. Clean hydraulic hoses using drycleaning solvent (D1). Dry with wiping rag (D53).

INSPECT

2. Inspect hoses for nicks, cuts and damaged threads.

REPAIR

3. No repair authorized. Make new replacement hoses per appropriate Appendix H number.



TYPICAL HOSE ASSEMBLY

406076-64

NOTE

Appendix H provides detailed fabrication instructions by part number for flexible hose assemblies. Refer to TM 55-1520-248-23P for identification of replacement parts by part number.

4. Perform hydrostatic test with pressure tester in accordance with TM 55-1500-204-25/1.

END OF TASK

7-4-5. REMOVE/INSTALL TEE, RETAINER, PACKING AND NUT

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Tee
Nut
Retainer
Packing

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-4-5. REMOVE/INSTALL TEE, RETAINER, PACKING AND NUT (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of transmission.

2. Place a wiping rag (D53) under relief valve (1). Remove B nuts (2) from each end of tee (3).

3. Loosen two B nuts (4).

4. Loosen clamp (5) on relief valve (1) by removing screw.

5. Loosen locknut (6) on tee (3). Raise relief valve (1) enough to turn tee counterclockwise.

6. Remove tee (3) with nut (6), retainer (7) and packing (8). Discard packing and replace other parts, if damaged.

INSTALL

7. Install nut (6), retainer (7) and packing (8) on tee (3).

8. Raise relief valve (1) enough to position tee (3) and turn tee clockwise in valve.

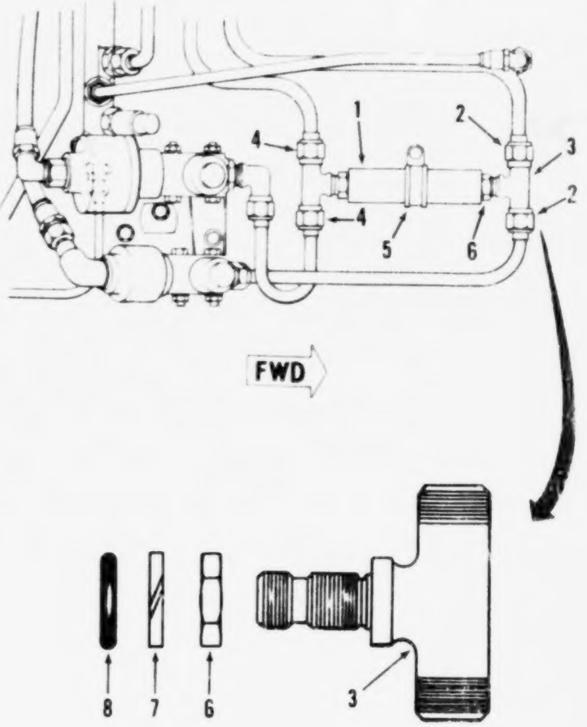
9. Install and secure clamp (5).

10. Place B nuts (2) on each end of tee (3) and tighten.

11. Tighten two B nuts (4).

12. Tighten locknut (6) against relief valve (1).

13. Remove wiping rag (D53) and clean area.



406070-9

INSPECT

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-4-6. REMOVE/INSTALL QUICK-DISCONNECT SELF-SEALING COUPLING HALF (TYPICAL)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Suitable Container
Wrench Open End 1-1/4

Parts:

Quick-Disconnect Coupling Half

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-4-6 REMOVE/INSTALL QUICK-DISCONNECT SELF-SEALING COUPLING HALF (TYPICAL) (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of the transmission.

2. Place suitable container or wiping rags (D53) under couplings.

3. Release quick-disconnect coupling half (1) by turning counterclockwise until coupling releases from coupling half (2).

4. Loosen fitting (3) and remove coupling half (1).

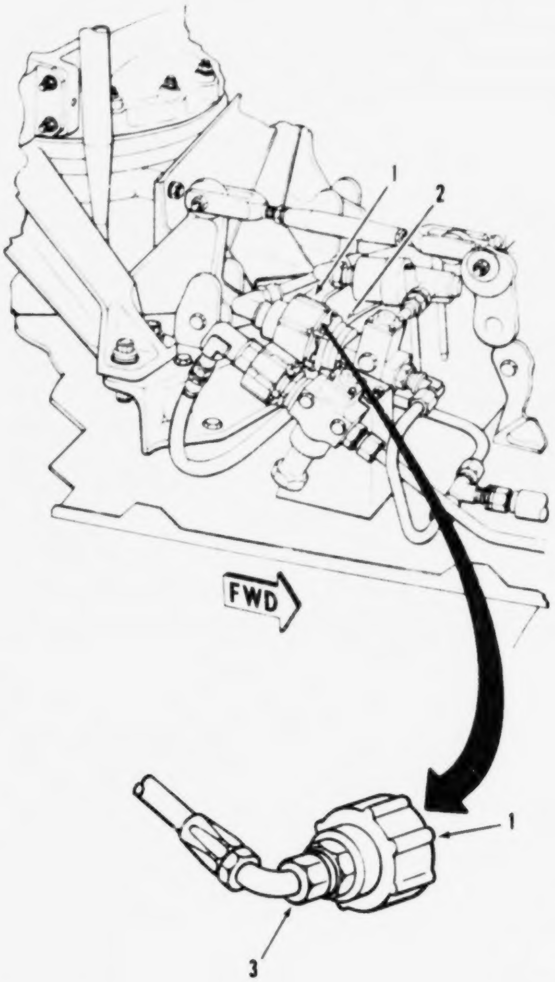
5. Discard leaking coupling half (1).

INSTALL

6. Screw fitting (3) on quick-disconnect coupling half (1) and tighten.

7. Connect coupling half (1) to coupling half (2) by turning coupling half (1) clockwise until hand tight. A clicking noise will be heard and felt.

8. Remove container or rags and clean area.



406076-5B

INSPECT

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

Section V. PRESSURE SWITCH, MANIFOLDS AND RELIEF VALVE

This section consists of removal, cleaning, inspection, repair, and installation of hydraulic pressure switch, hydraulic return manifold, hydraulic pressure manifold and hydraulic relief valve.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Pressure Switch	7-5-1	7-35
Clean, Inspect and Repair Hydraulic Pressure Switch	7-5-2	7-37
Remove/Install Return Manifold	7-5-3	7-38
Remove/Install Pressure Manifold	7-5-4	7-41
Remove/Install Relief Valve	7-5-5	7-44

7-5-1. REMOVE/INSTALL PRESSURE SWITCH

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Pressure Switch
Packing

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-5-1. REMOVE/INSTALL PRESSURE SWITCH (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of the transmission.

2. Place wiping rags (D53) under and around pressure switch (1).

3. Disconnect electrical connector (2).

4. Turn pressure switch (1) counterclockwise and remove.

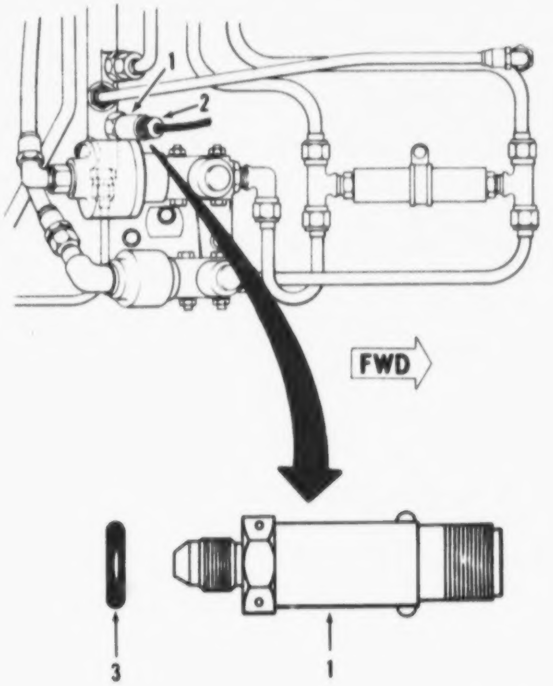
5. Discard packing (3).

INSTALL

6. Install packing (3) on pressure switch (1).

7. Place pressure switch (1) in position. Turn clockwise and tighten.

8. Connect electrical connector (2).



406076-7

INSPECT

9. Remove wiping rags and clean area.

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Fill hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-5-2 CLEAN, INSPECT AND REPAIR HYDRAULIC PRESSURE SWITCH

This task covers: Cleaning, Inspection and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Nonmetallic Brush

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean hydraulic pressure switch with drycleaning solvent (D1) using a nonmetallic brush.

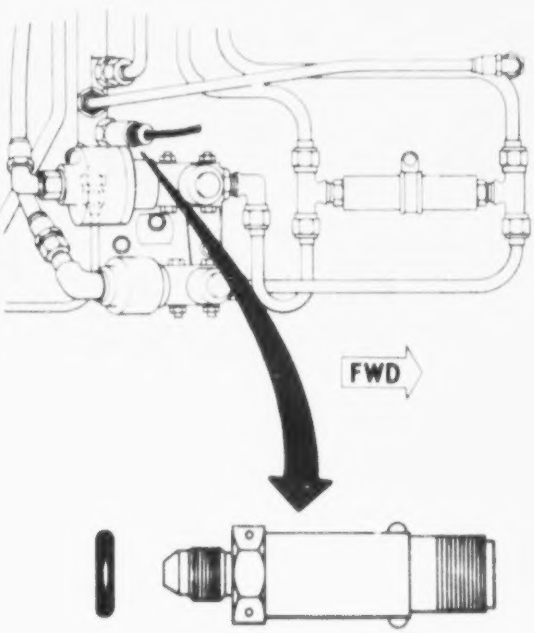
2. Dry hydraulic pressure switch with a wiping rag (D53).

INSPECT

3. Inspect hydraulic pressure switch for damaged threads and any other visible damage. Any visible damage such as nicks and grooves are not acceptable in threads and sealing area of pressure switch.

REPAIR

4. Replace hydraulic pressure switch if damaged or defective (Task 7-5-1).



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INSPECT

END OF TASK

7-5-3. REMOVE/INSTALL RETURN MANIFOLD

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packings (6)

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-5-3. REMOVE/INSTALL RETURN MANIFOLD (CONT)

REMOVE

1. Move maintenance platform in position to gain access to left side of roof, forward of transmission.

2. Place wiping rags (D53) under hydraulic system return manifold (1).

NOTE

> To facilitate the removal of the return manifold when disconnecting tube and hose assemblies, it may be necessary to loosen opposite end of tubes, hoses, and clamping.

3. Disconnect hoses (2, 3 and 4) and tubes (5, 6 and 7) from return manifold (1). Cap hoses and tubes.

4. Remove following components from manifold (1).

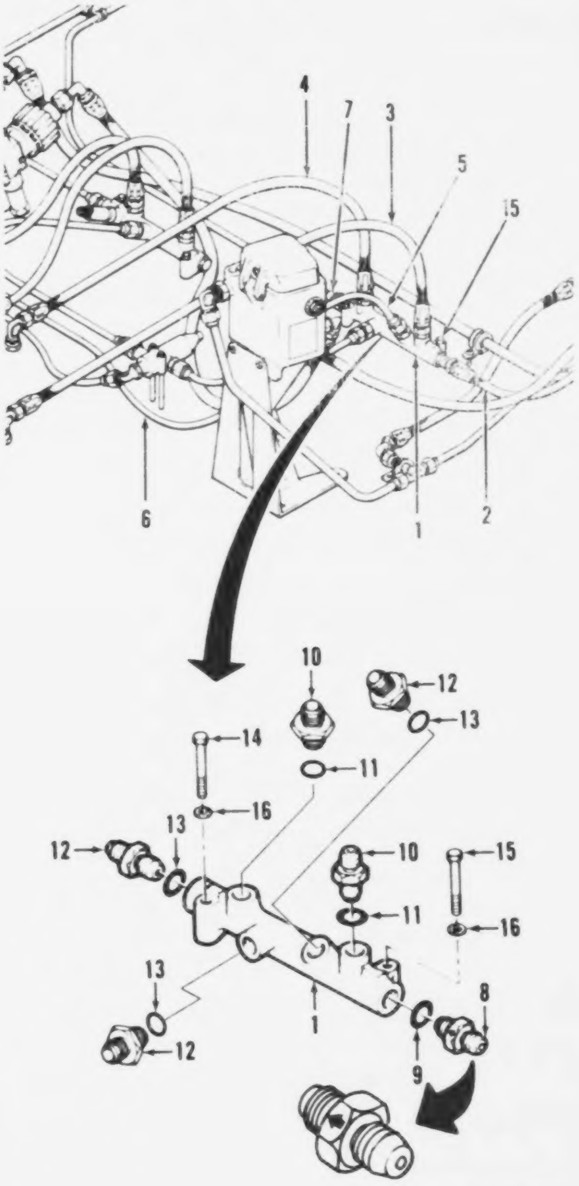
a. Check valve (8) and packing (9). Discard packing.

b. Two unions (10) and two packings (11). Discard packings.

c. Three unions (12) and three packings (13). Discard packings.

5. Remove bolts (14 and 15) and washers (16).

6. Remove manifold (1).



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7-5-3 REMOVE/INSTALL RETURN MANIFOLD (CONT)

INSTALL

CAUTION

Check valve in case drain line at return manifold must be installed with arrow pointing away from pump. Improper installation (backward) will cause the pump to overheat and can result in precautionary or forced landings.

7. Install packing (9) on check valve (8), two packings (11) on two unions (10), and three packings (13) on three unions (12). Install components in ports of return manifold (1) as shown.

8. Position return manifold (1) over mounting inserts and install bolts (14 and 15) with washers (16).

NOTE

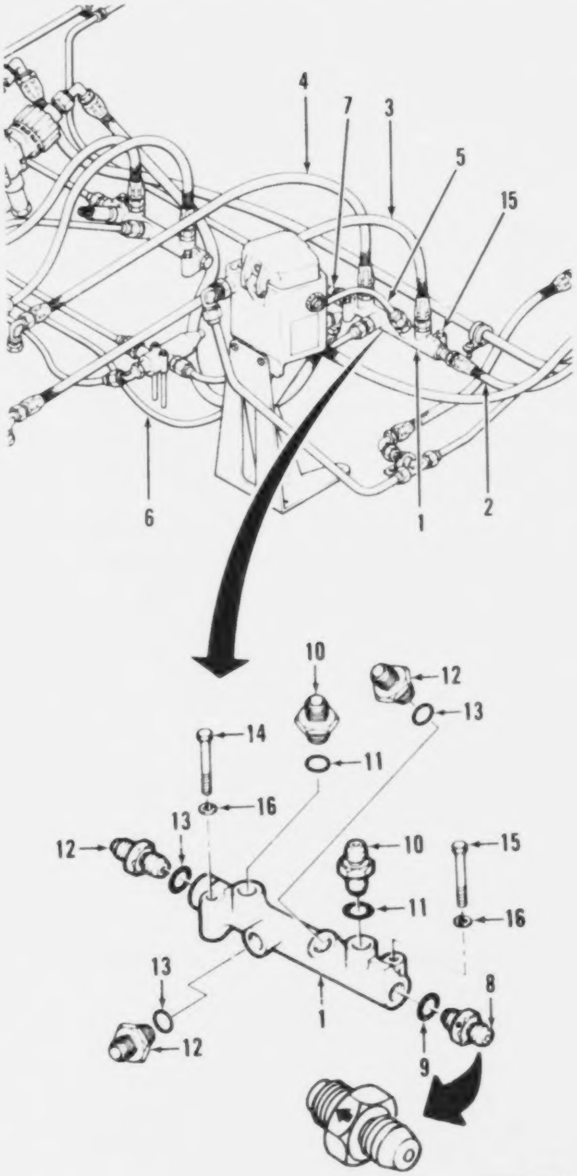
Inboard bolt (14) is longer than bolt (15).

9. Connect hoses (2, 3 and 4) and tubes (5, 6 and 7) to manifold (1) as shown.

NOTE

If clamping or fittings were loosened, secure as required.

10. Remove rags and clean area.



406076-59B

INSPECT

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install transmission fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-5-4. REMOVE/INSTALL PRESSURE MANIFOLD

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packings (6)

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-5-4. REMOVE/INSTALL PRESSURE MANIFOLD (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof, forward of transmission.

2. Place wiping rags (D53) under hydraulic system pressure manifold (1).

NOTE

> To facilitate the removal of the pressure manifold when disconnecting tube and hose assemblies, it may be necessary to loosen opposite end of tubes, hoses and clamping.

3. Disconnect electrical connector from pressure switch (2) on manifold (1).

4. Disconnect tubes (3), (4), and hoses (5), (6), from pressure manifold (1). Cap tubes and hoses.

5. Remove following components from manifold (1).

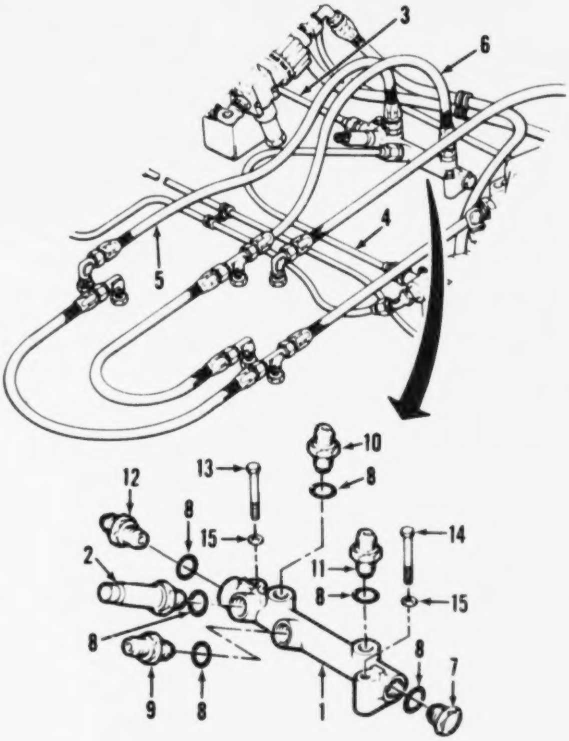
   a. Plug (7) and packing (8). Discard packing (8).

   b. Reducer (9) and unions (10), (11), and (12). Discard packings (8).

   c. Pressure switch (2). Discard packing (8).

6. Remove bolts (13), (14), and washers (15).

7. Remove manifold (1).



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7-5-4. REMOVE/INSTALL PRESSURE MANIFOLD (CONT)

INSTALL

NOTE

Inboard bolt (13) is longer than bolt (14).

8. Position manifold (1) over mounting inserts and install bolts (13) and (14), with washers (15).

9. Install packing (8) on plug (7), reducer (9), unions (10), (11), and (12) and pressure switch (2). Install components in ports of manifold (1) as shown.

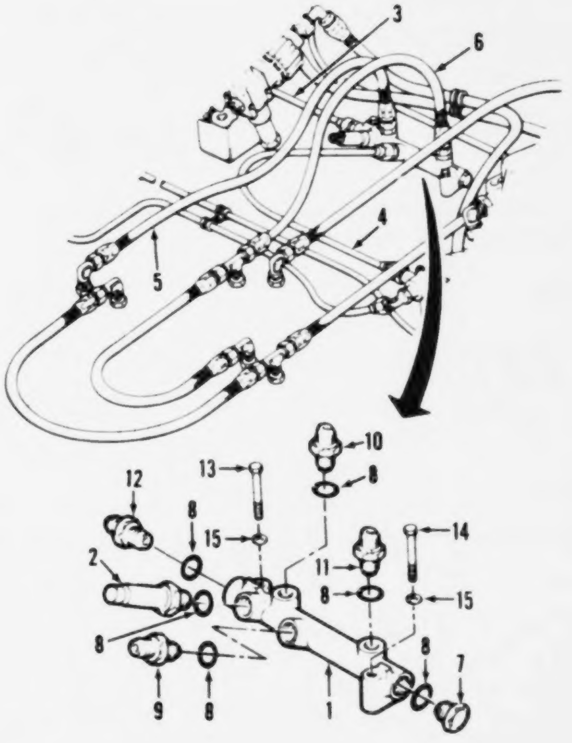
10. Connect electrical connector to pressure switch (2).

11. Connect tubes (3) and (4) and hoses (5) and (6) as shown.

NOTE

If clamping or fitting was loosened, secure as required.

12. Remove rags and clean the area.



406076-58B

INSPECT

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install transmission fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-5-5. REMOVE/INSTALL RELIEF VALVE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packings (2)
Retainers (2)

Materials:

Wiping Rags (D53)
Hydraulic Fluid (D35)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-5-5 REMOVE/INSTALL RELIEF VALVE (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of the transmission.

2. Place wiping rags (D53) around relief valve.

3. Disconnect return lines (1) and pressure lines (2). Remove screw (3) and washer (4) securing valve to roof. Remove valve (5). Cap off open lines.

4. Hold valve (5) by wrench flats and loosen jamnuts (6) at both ends of valve.

5. Remove two tee fittings (7), retainers (8), and packings (9). Discard packings (9). Slide clamp (10) from valve (5).

INSTALL

6. Position clamp (10) on valve (5).

7. Lubricate packing (9) with hydraulic fluid (D35). Place packing (9) and retainer (8) in valve (5).

8. Install tee (7) in end of valve (5). Tighten jamnut (6) against valve (5).

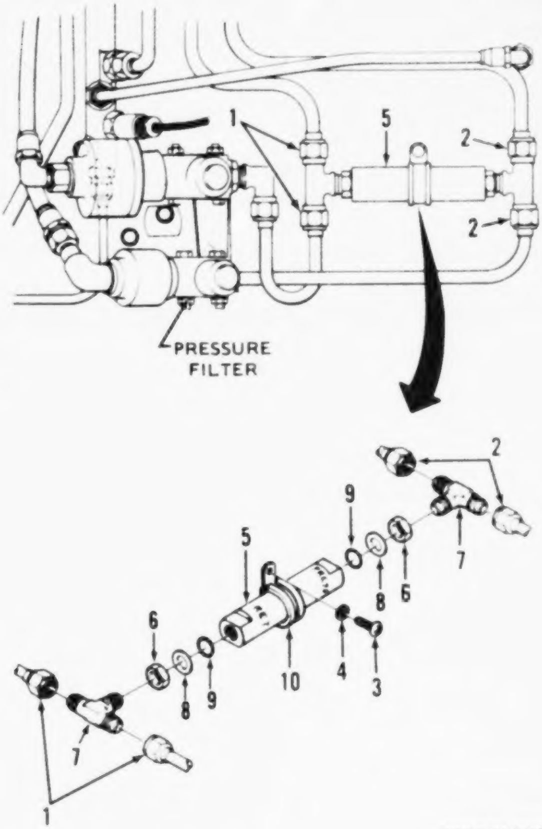
9. Accomplish steps 7. and 8. on opposite end of valve (5).

10. Position valve on helicopter roof between lines (1) and (2). Remove caps from lines. Connect lines (1) and (2) to tees (7).

11. Position hole in clamp (10) over roof insert and install screw (3) and washer (4).

12. Remove wiping rags and clean area.

INSPECT



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FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Fill hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Perform operational check (Task 7-1-1).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

Section VI. HYDRAULIC SOLENOID VALVE

This section covers removal, cleaning, inspection, repair, and installation of the hydraulic solenoid valve.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Hydraulic Solenoid Valve	7-6-1	7-47
Remove/Install Hydraulic Solenoid—Inoperative	7-6-2	7-50
Clean, Inspect, Repair Hydraulic Solenoid Valve	7-6-3	7-51

7-6-1. REMOVE/INSTALL HYDRAULIC SOLENOID VALVE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packings
Retainer (3)

Materials:

Hydraulic Fluid (D35)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-6-1. REMOVE/INSTALL HYDRAULIC SOLENOID VALVE (CONT)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of transmission.

2. Disconnect quick release electrical connector (1) from solenoid valve (2).

3. Place wiping rags (D53) around solenoid valve to catch fluid.

4. Disconnect pressure line (3), return line (4), and cylinder line (5) from solenoid valve (2).

5. Cap hydraulic lines and openings on solenoid valve.

6. Remove two bolts (6), two washers (7) and two spacers (8) from solenoid valve (2).

NOTE

If solenoid valve is leaking, damaged or replacement is necessary, proceed with steps 7 and 8.

7. Loosen nut (9) and unscrew elbow (10) with nut, retainer (11) and packing (12). Discard retainer and packing.

8. Remove two unions (13) with packings (14). Discard packings.

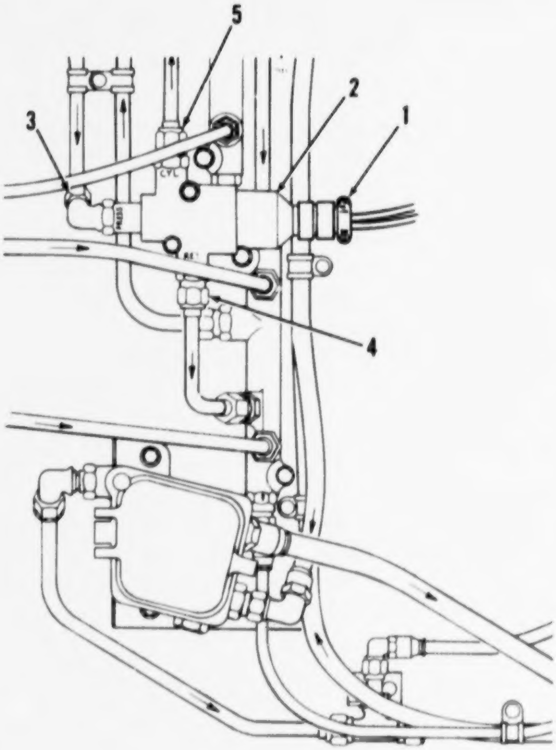
NOTE

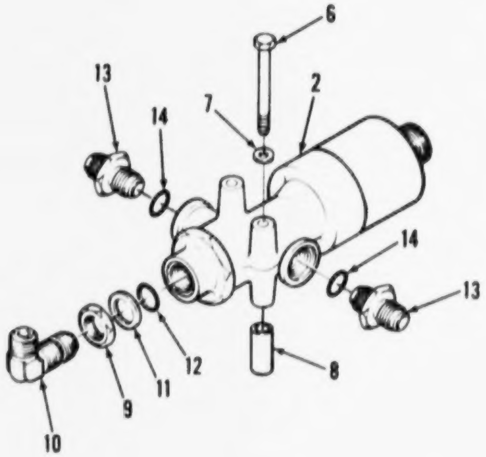
If fittings were removed, accomplish step 9. If not, proceed to step 10.

INSTALL

9. Lubricate two unions (13) and packings (14) with hydraulic fluid (D35) and install solenoid valve (2).

10. Assemble nut (9), retainer (11), packing (12) on elbow (10). Lubricate assembly and install in solenoid valve (2).





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7-6-1. REMOVE/INSTALL HYDRAULIC SOLENOID VALVE (CONT)

11. Remove protective caps from hydraulic lines and solenoid valve openings.

12. Position solenoid valve (2) on transmission work deck and install two bolts (6) with washers (7) and spacers (8).

13. Install pressure line (3), return (4), and cylinder line (5) to solenoid valve (2).

14. Connect quick release electrical connector (1) to solenoid valve (2).

15. Remove wiping rags and clean the area.

INSPECT

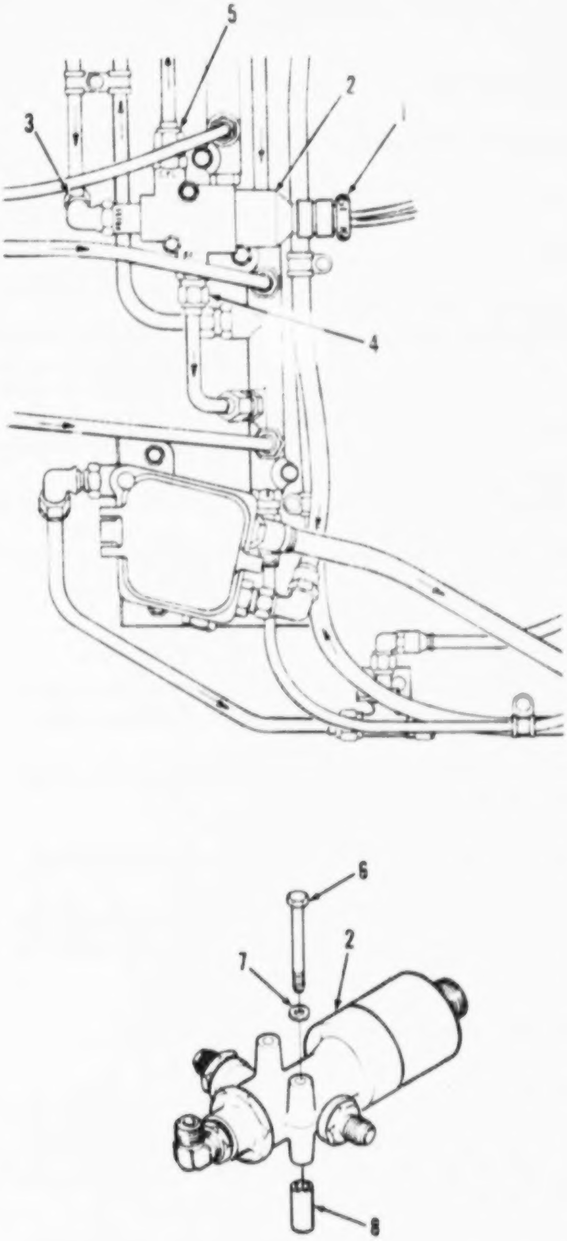
FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

7-6-2. REMOVE/INSTALL HYDRAULIC SOLENOID — INOPERATIVE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Solenoid
Packing

Materials:

Lockwire (D76)
Hydraulic Fluid (D35)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

REMOVE

1. Move maintenance platform in position to gain access to right side of roof forward of transmission.

2. Disconnect electrical connector (1) from solenoid (2).

3. Cut lockwire from solenoid (2) to valve body (3).

4. Unscrew solenoid (2) from valve body (3). Do not remove internal parts of valve. Discard solenoid (2).

5. Remove and discard packing (4).

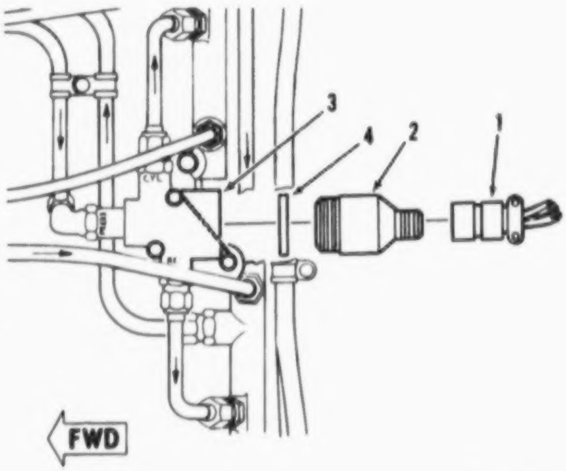
INSTALL

6. Lubricate packing (4) with hydraulic fluid (D35) then place packing in valve body (3) and screw solenoid (2) into valve body.

7. Secure solenoid (2) to valve body (3) with lockwire (D76).

8. Install electrical connector (1).

INSPECT



406076-21

FOLLOW-ON MAINTENANCE

Perform operational check (Task 7-1-1).

Install forward fairing assembly (Task 2-1-21).

END OF TASK

7-6-3 CLEAN, INSPECT, REPAIR HYDRAULIC SOLENOID VALVE

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 150-750 Inch-Pounds

Parts:

Packing
Retainer

Materials:

Lockwire (D76)
Hydraulic Fluid (D35)
Wiping Rags (D53)
Drycleaning Solvent (D1)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Hydraulic Solenoid Valve Removed (Task 7-6-1)

NOTE

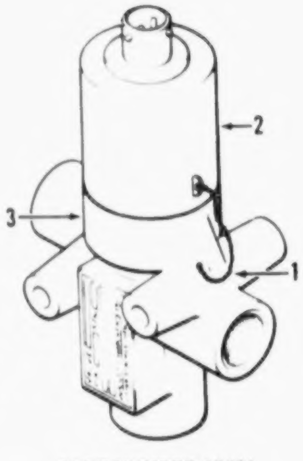
The hydraulic solenoid valve P/N 206-076-037 has two vendor part numbers. Use the correct part number procedure.

Part Number 15431

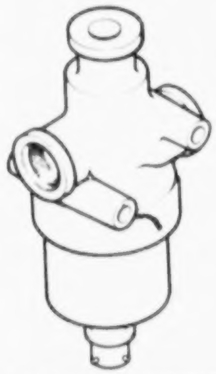
DISASSEMBLE

1. Cut lockwire (1) from solenoid assembly (2) to valve body (3).

2. Unscrew solenoid assembly (2) from valve body (3).



PART NUMBER 15431



PART NUMBER 42C42650

406076-85

GO TO NEXT PAGE

7-6-3. CLEAN, INSPECT, REPAIR HYDRAULIC SOLENOID VALVE (CONT)

3. Remove and discard packing (4).

4. Remove spool (5) and spring (6) from valve body (3).

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

5. Clean valve body (3), spool (5), and spring (6) by vigorous agitation in a container of drycleaning solvent (D1).

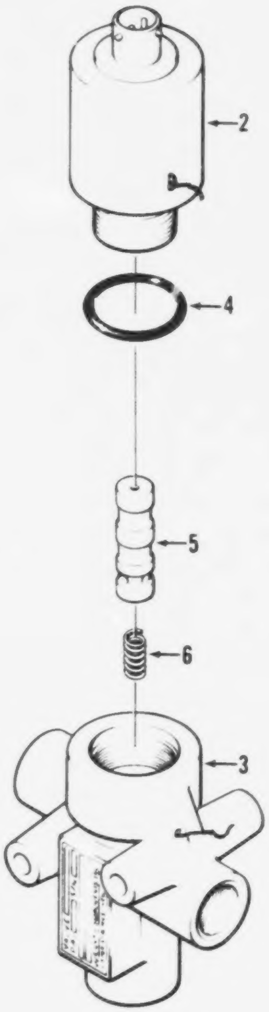
6. Clean solenoid assembly (2) with wiping rag (D53) dampened in solvent (D1).

INSPECT

7. Inspect solenoid assembly (2) for:

a. Bent or broken connector pin(s). None allowed.

b. Thread damage. None allowed.



406076-66

GO TO NEXT PAGE

7-6-3. CLEAN, INSPECT, REPAIR HYDRAULIC SOLENOID VALVE (CONT)

8. Inspect valve body (3) for cracks, scoring, and damaged threads. None allowed.

9. Inspect spool (5) for scoring and pitting. None allowed.

10. Inspect spring (6) for chafing. Not allowed.

REPAIR

11. Replace solenoid assembly (2) and/or spring (6) if defective.

12. Replace valve body (3) or spool (5) if defective.

ASSEMBLE

13. Assemble hydraulic solenoid valve (3) as follows:

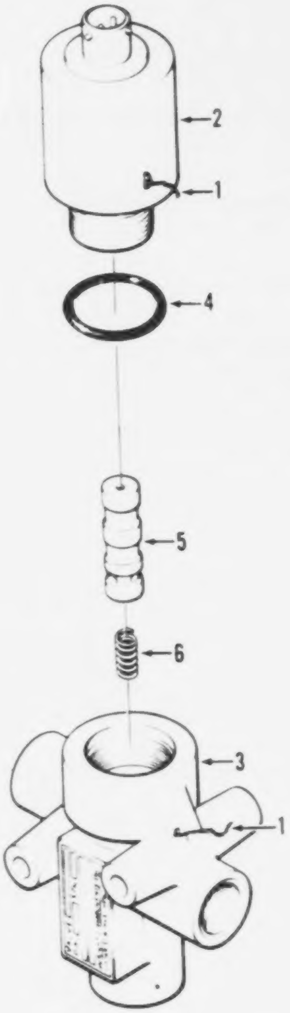
a. Lubricate packing (4) with hydraulic fluid (D35) and install on solenoid assembly (2).

b. Lubricate spool (5) and spring (6) with hydraulic fluid (D35).

c. Install spring (6) and spool (5) into valve body (3).

d. Screw solenoid assembly (2) into valve body (3).

e. Secure solenoid assembly (2) to valve body (3) with lockwire (D76) (1).



406076-2-1

INSPECT

GO TO NEXT PAGE

7-6-3. CLEAN, INSPECT, REPAIR HYDRAULIC SOLENOID VALVE (CONT)

Part Number 42C42650

DISASSEMBLE

14. Cut lockwire (1) from coil assembly (2) to valve body (3).

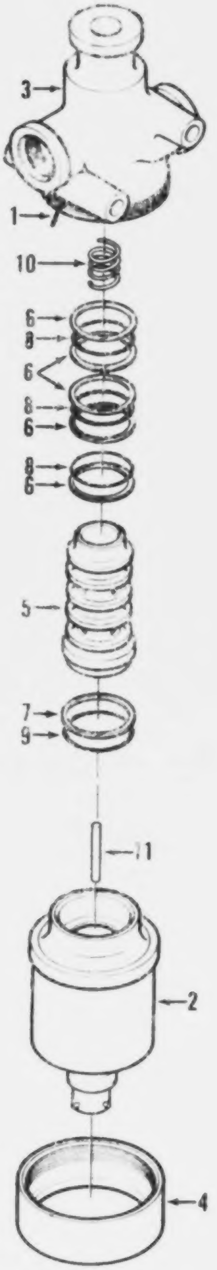
15. Remove nut (4) and separate coil assembly (2) from valve body (3).

16. Remove lap assembly (5) from valve body (3).

17. Remove and discard six retainers (6 and 7) and four packings (8 and 9) from lap assembly (5).

18. Remove spring (10) from lap assembly (5).

19. Remove pin (11) from coil assembly (2).



706076-2-3A

CLEAN

WARNING

> Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

20. Clean valve body (3), lap assembly (5), spring (10), and nut (4) by vigorous agitation in a container of solvent (D1).

21. Clean coil assembly (2) and pin (11) with wiping rag (D53) dampened in solvent (D1).

INSPECT

22. Inspect coil assembly (2) for bent or broken connector pin(s). None allowed.

GO TO NEXT PAGE

23. Inspect nut (4) and valve body (3) for cracks, scoring, and damaged threads. None allowed.

24. Inspect lap assembly (5) for scoring and pitting and grooves for scratches. None allowed.

25. Inspect spring (10) and pin (11) for chafing. Not allowed.

REPAIR

26. Replace coil assembly (2), pin (11), and/or spring (10) if defective.

27. Replace valve body (3), nut (4), or lap assembly (5) if defective.

ASSEMBLE

28. Assemble hydraulic solenoid valve as follows:

NOTE

Lubricate parts with hydraulic fluid (D35) before assembly.

a. Install retainer (7) and packing (9) on lap assembly (5).

b. Install five retainers (6) and three packings (8) on lap assembly (5).

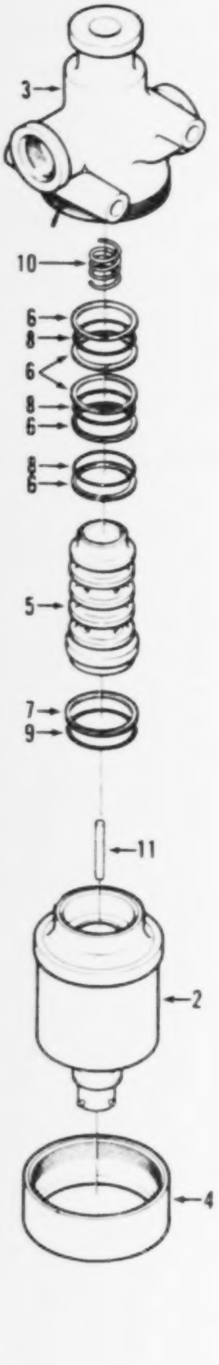
c. Install pin (11) into coil assembly (2).

d. Install spring (10) into lap assembly (5).

e. Install lap assembly (5) into valve body (3).

f. Mate coil assembly (2) with valve body (3).

g. Install nut (4). Torque nut (4) **280-320 INCH-POUNDS.**



706076-2-3A

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7-6-3. CLEAN, INSPECT, REPAIR HYDRAULIC SOLENOID VALVE (CONT)

h. Secure nut (4) to valve body (3) with lockwire (D76) (1).

INSPECT

FOLLOW-ON MAINTENANCE

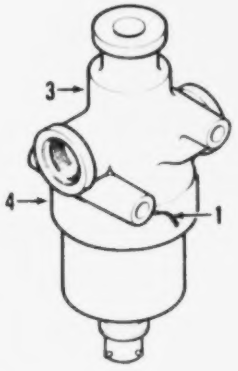
Install hydraulic solenoid valve (Task 7-6-1).

Perform operational check (Task 7-1-1).

Bleed hydraulic system (Task 7-2-1).

Service hydraulic reservoir (Task 1-4-8).

Install forward fairing assembly (Task 2-1-21).



406076-2-4B

END OF TASK

Section VII. HYDRAULIC RESERVOIR

This section consists of removal, cleaning, inspection, repair, and installation of the hydraulic reservoir assembly and replacement of some of its components.

LIST OF TASK

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Hydraulic Reservoir Assembly	7-7-1	7-58
Remove/Install Hydraulic Reservoir Cover, Pin and Cap Gasket	7-7-2	7-61
Remove/Install Hydraulic Reservoir Cover Latch Assembly	7-7-3	7-63
Remove/Install Hydraulic Reservoir Return Port Union	7-7-4	7-65
Remove/Install Hydraulic Reservoir Sight Plug	7-7-5	7-67
Remove/Install Hydraulic Reservoir Strainer and Cover Gasket	7-7-6	7-68
Remove/Install Hydraulic Reservoir Screen	7-7-7	7-70
Clean, Inspect and Repair Hydraulic Reservoir	7-7-8	7-71

7-7-1. REMOVE/INSTALL HYDRAULIC RESERVOIR ASSEMBLY

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Packing

Materials:

Wiping Rags (D53)
Lockwire (D4)

Personnel Required:

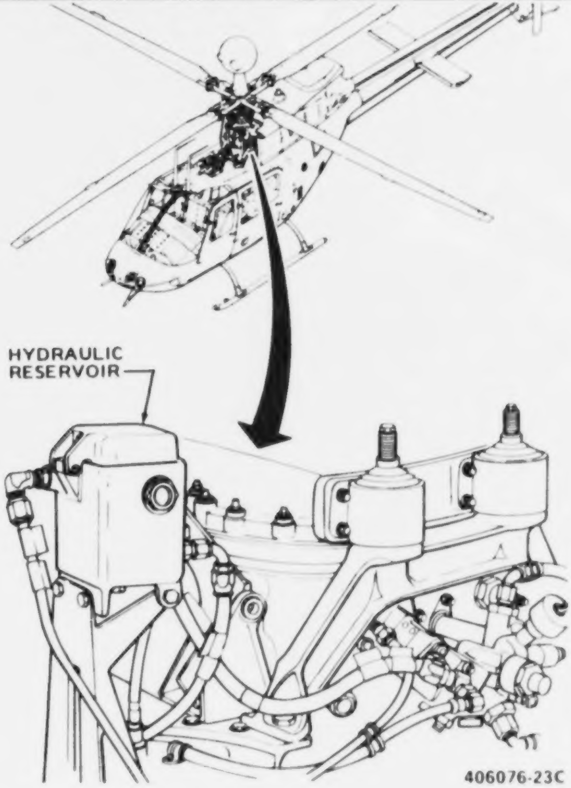
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF



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7-7-1. REMOVE/INSTALL HYDRAULIC RESERVOIR ASSEMBLY (CONT)

REMOVE

1. Position maintenance platform on forward left side of helicopter to gain access to transmission.

2. Position suitable container under reservoir (1).

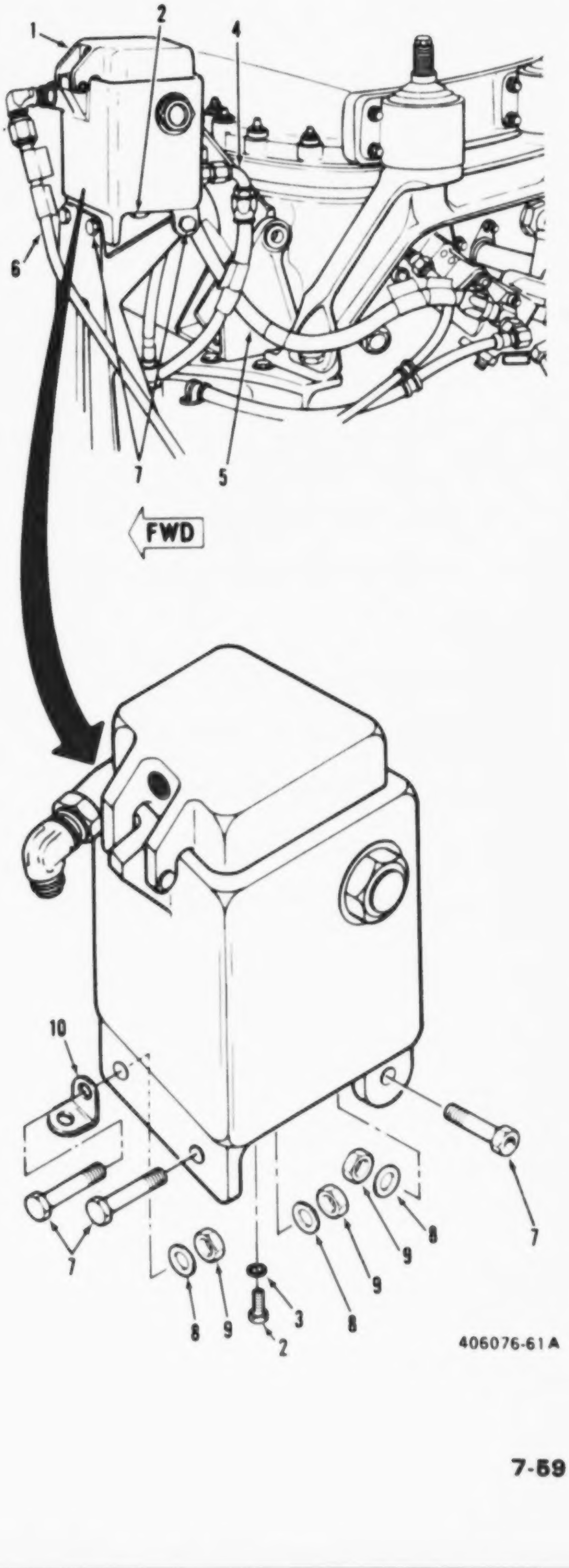
3. Cut lockwire and remove plug (2) and packing (3). Discard packing (3).

4. Disconnect return hose (4), suction hose (5), and drain tube (6).

5. Cap hoses, tube, and fittings.

6. Remove three bolts (7), washers (8), and nuts (9) and one bracket (10).

7. Remove reservoir. Clean deck with wiping rags (D53) and discard used fluid.



406076-61A

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7-7-1 REMOVE/INSTALL HYDRAULIC RESERVOIR ASSEMBLY (CONT)

INSTALL

8. Remove protective caps from serviceable reservoir (1) fittings.

9. Position reservoir (1) onto bracket and secure with three bolts (7), washers (8), and nuts (9). Include bracket (10) as shown.

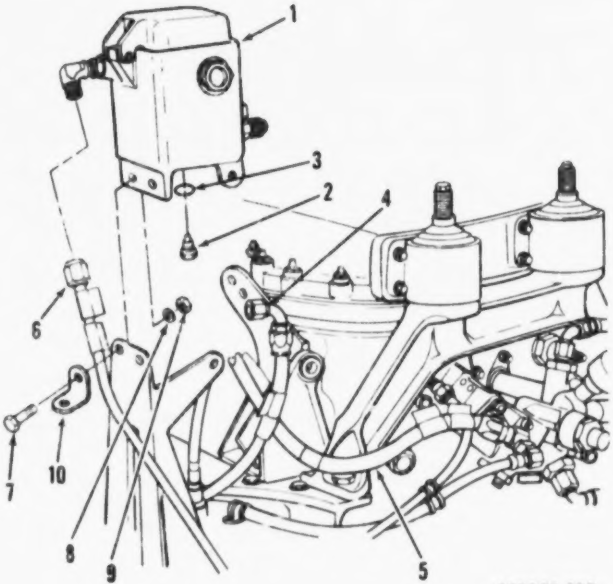
10. Remove protective caps from hoses (4 and 5) and drain tube (6).

11. Connect return hose (4), suction hose (5), and drain tube (6) to reservoir (1).

12. Install new packing (3) on drain plug (2) install drain plug (2) in reservoir (1).

13. Secure drain plug (2) with lockwire (D4).

14. Clean area using wiping rags (D53).



406076-39B

INSPECT

FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-7-2 REMOVE/INSTALL HYDRAULIC RESERVOIR COVER, PIN AND CAP GASKET

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Washer
Cotter Pin

Personnel Required:

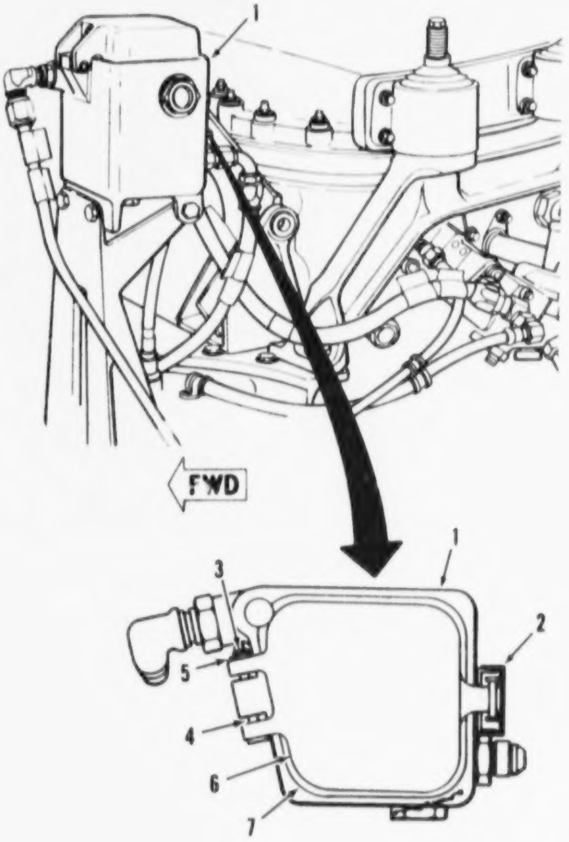
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

7-7-2. REMOVE/INSTALL HYDRAULIC RESERVOIR COVER, PIN AND CAP GASKET (CONT)



406076-12

REMOVE

1. Position maintenance platform on left side of helicopter forward of transmission.
2. At hydraulic reservoir assembly (1) unlock latch (2).
3. Remove cotter pin (3) from hinge pin (4). Discard cotter pin.
4. Remove hinge pin (4) and washer (5) from cover (6).
5. Remove cover (6) from reservoir (1).
6. Remove and discard gasket (7).

INSTALL

7. Install new gasket (7).
8. Position cover (6) on reservoir (1).
9. Install hinge pin (4) and washer (5). Secure with cotter pin (3).
10. Close cover (6) and lock latch (2).

INSPECT

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21).

END OF TASK

7-7-3 REMOVE/INSTALL HYDRAULIC RESERVOIR COVER LATCH ASSEMBLY

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Washer
Cotter Pin
Packing
Rivet (2)

Materials:

Tape, Dissimilar Metal Separation (D152)
Lockwire (D4)
Wiping Rag (D53)
Hydraulic Fluid (D35)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68G Aircraft Structural Repairman

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

7-7-3 REMOVE/INSTALL HYDRAULIC RESERVOIR COVER LATCH ASSEMBLY (CONT)

REMOVE

1. Position maintenance platform on left side of helicopter forward of transmission.

2. Position suitable container under drain plug (1). Remove drain plug (1) and drain fluid.

3. Disconnect return hose (2), suction hose (3), and drain tube (4) from hydraulic reservoir.

4. Remove lockpin (5) from latch assembly (6) and hydraulic reservoir (7).

5. Open latch assembly (6) and remove two rivets (8).

6. Flush hydraulic reservoir with hydraulic fluid (D35) to remove metal chips caused by rivet removal.

INSTALL

7. Apply dissimiliar metal separation tape (D152) to latch assembly (6) mounting area.

8. Position and install two rivets (8) through latch assembly (6) and hydraulic reservoir (7).

9. Connect return hose (2), suction hose (3), and drain tube (4) to hydraulic reservoir.

10. Install new packing (9) on plug (1). Install plug (1) in bottom of hydraulic reservoir (7).

11. Lockwire (D4) plug (1) to hydraulic reservoir (7).

12. Clean deck using wiping rag (D53).

INSPECT

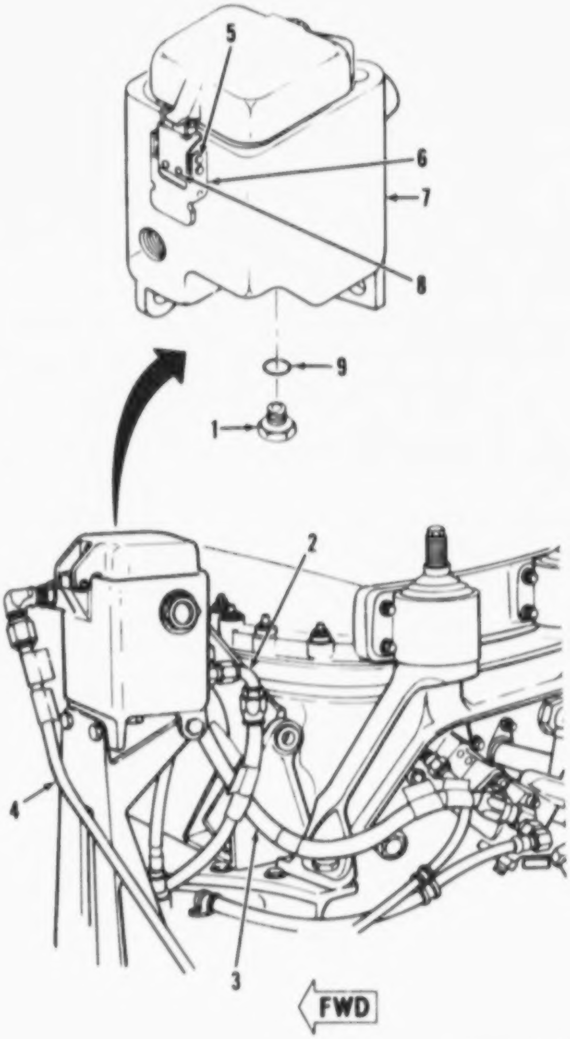
FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install forward fairing assembly (Task 2-1-21).

END OF TASK



406076-54A

7-7-4. REMOVE/INSTALL HYDRAULIC RESERVOIR RETURN PORT UNION

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Union
Packing

Materials:

Hydraulic Fluid (D35)
Lockwire (D4)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

7-7-4 REMOVE/INSTALL HYDRAULIC RESERVOIR RETURN PORT UNION (CONT)

REMOVE

1 Position maintenance platform on left side of helicopter forward of transmission.

2 Position suitable container under drain plug (1) cut lockwire and remove drain plug (1) and discard packing (4). Drain fluid in suitable container.

3 Disconnect hose (2) from union (3).

4 Remove union (3) and discard packing (4).

INSTALL

5 Lubricate packing (4) with hydraulic fluid (D35).

6 Install packing (4) on union (3).

7 Install union (3) in reservoir (5).

8 Install hose (2) on union (3).

9 Install new packing (4) on plug (1). Screw drain plug (1) into bottom of hydraulic reservoir (5), and tighten plug (1).

10 Lockwire (D4) drain plug (1) to hydraulic reservoir (5).

11 Clean area using wiping rags (D53).

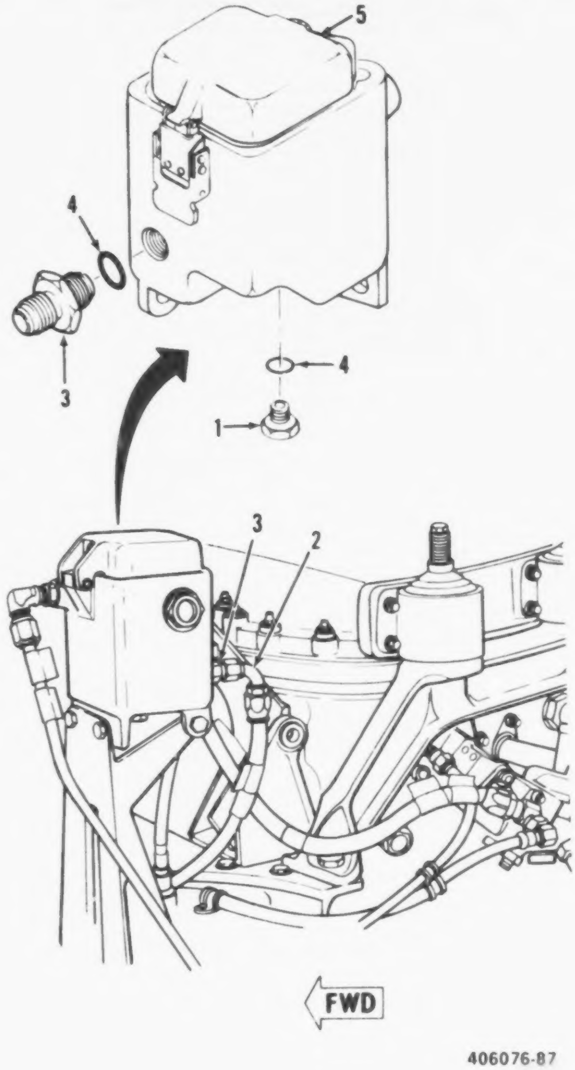
INSPECT

FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install transmission forward fairing (Task 2-1-21).



END OF TASK

7-7-5 REMOVE/INSTALL HYDRAULIC RESERVOIR SIGHT PLUG

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Torque Wrench 30-150 Inch-Pounds

Parts:

Packing

Materials:

Hydraulic Fluid (D35)
Lockwire (D4)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

REMOVE

1. Position maintenance platform on left side of helicopter forward of transmission.

2. Position suitable container under drain plug (1). Cut lockwire and remove drain plug (1). Drain fluid into suitable container and discard packing (5).

3. Cut lockwire and remove sight plug (2) with packing (3). Discard packing.

INSTALL

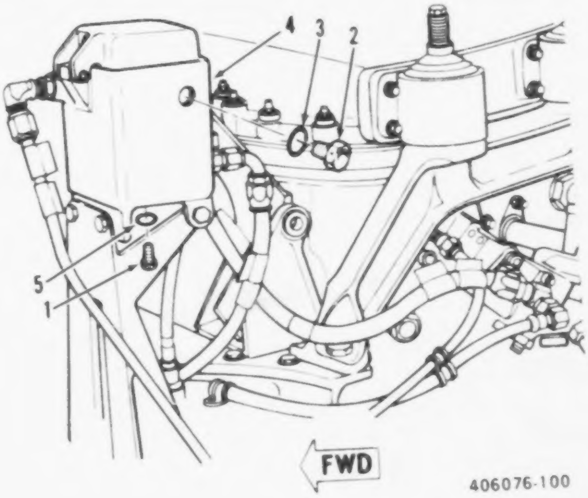
4. Lubricate packing (3) with hydraulic fluid (D35) and install on sight plug (2).

5. Screw sight plug (2) into reservoir (4) and torque **95-105 INCH-POUNDS**.

6. Install new packing (5) on drain plug (1). Screw in drain plug (1) and tighten.

7. Lockwire (D4) drain plug (1) and sight plug (2) to reservoir (4).

8. Clean area using wiping rags (D53).



406076-100

INSPECT

FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install transmission forward fairing (Task 2-1-21).

END OF TASK

7-7-6. REMOVE/INSTALL HYDRAULIC RESERVOIR STRAINER AND COVER GASKET

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Strainer
Packing
Gasket

Materials:

Hydraulic Fluid (D35)
Lockwire (D4)
Wiping Rags (D53)
Adhesive RTV (D160)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

GO TO NEXT PAGE

7-7-6 REMOVE/INSTALL HYDRAULIC RESERVOIR STRAINER AND COVER GASKET (CONT)

REMOVE

1. Position maintenance platform on left side of helicopter forward of transmission.

2. Position suitable container under drain plug (1). Cut lockwire and remove drain plug (1). Discard packing (2). Drain fluid into suitable container.

3. Open hydraulic reservoir cover (3) and remove strainer (4) from hydraulic reservoir (5).

4. Remove hydraulic reservoir cover gasket (6) from hydraulic reservoir (5). Discard hydraulic reservoir gasket (6).

INSTALL

5. Install new hydraulic reservoir cover gasket (6) in groove in top of hydraulic reservoir (5).

6. Apply a bead of adhesive (D160) (7) on two opposite sides as shown.

7. Place strainer (4) on bead of adhesive (7) and press firmly in place.

8. Close hydraulic reservoir cover (3) and secure with latch (8).

9. Lubricate packing (2) with hydraulic fluid (D35) and install on plug (1). Screw drain plug (1) into bottom of hydraulic reservoir (5) and tighten plug (1).

10. Lockwire (D4) drain plug (1) to hydraulic reservoir (5).

11. Clean area using wiping rags (D53).

INSPECT

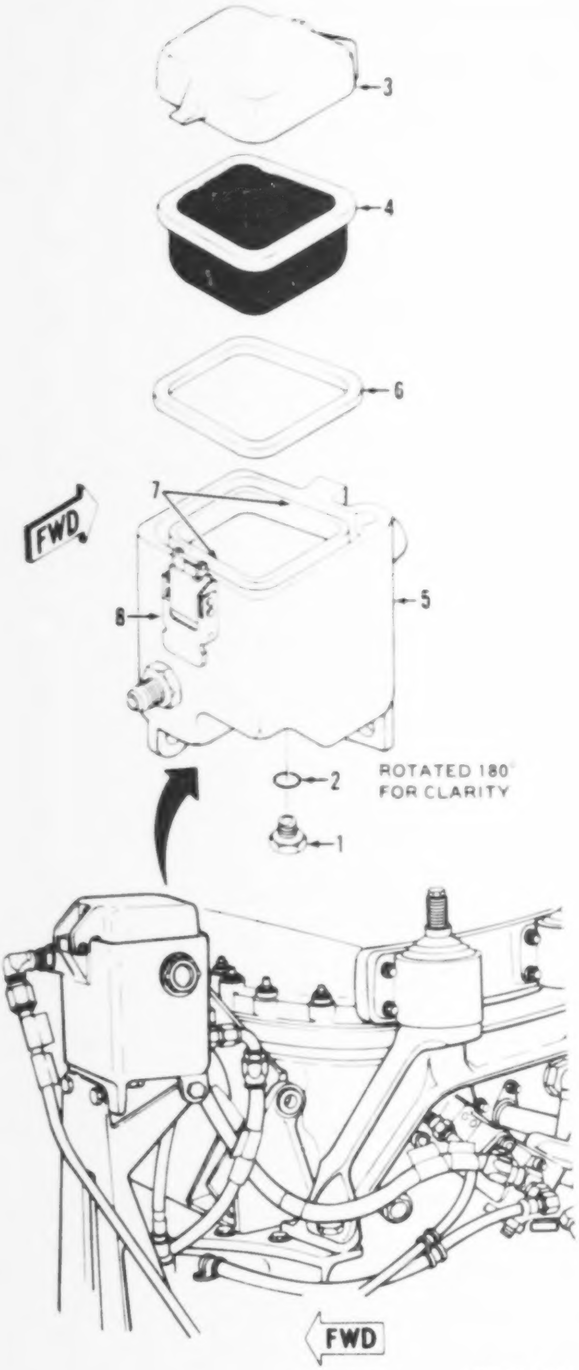
FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install transmission forward fairing (Task 2-1-21).

END OF TASK



406076-55B

7-7-7. REMOVE/INSTALL HYDRAULIC RESERVOIR SCREEN

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform

Parts:

Screen

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

REMOVE

1. Position maintenance platform on left side of helicopter forward of transmission.

2. Remove hydraulic reservoir cover (1) from hydraulic reservoir (2) (Task 7-7-2).

NOTE

Cover reservoir to preclude contamination.

3. Pry screen (3) from hydraulic reservoir cover (1) and discard screen.

INSTALL

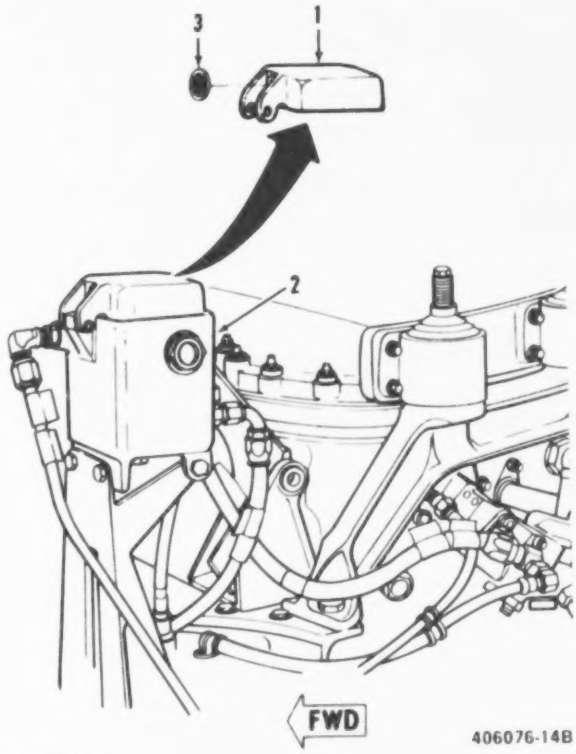
4. Clean out counterbore for screen in hydraulic reservoir cover.

5. Install screen (3) in hydraulic reservoir cover (1).

6. Pin stake screen (3) in hydraulic reservoir cover (1). Pin stake three places, equally spaced. Pin stake depth 0.025 inch maximum.

7. Install hydraulic reservoir cover (1) on hydraulic reservoir (2) (Task 7-7-2).

8. Clean area using wiping rags (D53).



INSPECT

FOLLOW-ON MAINTENANCE

Install transmission forward fairing (Task 2-1-21).

END OF TASK

7-7-8 CLEAN, INSPECT AND REPAIR HYDRAULIC RESERVOIR

This task covers: Cleaning, Inspection and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Materials:

Methyl-Ethyl-Ketone (MEK) (D6)
Wiping Rags (D53)
Rubber Gloves (D119)
Sandpaper (D10)
Chromic Acid (D171)
Chromic Pickle Solution (D172)
Polyamide Epoxy Primer (D13)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

References:

TM 43-0105
TM 55-1500-204-25/1

CLEAN

WARNING

Methyl-Ethyl-Ketone (MEK) (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well ventilated area away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

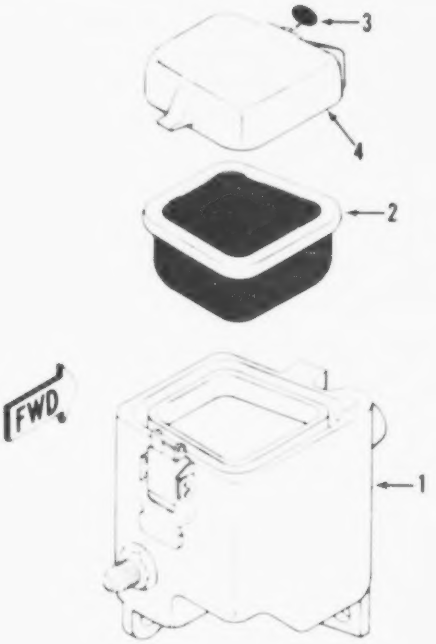
1. Clean hydraulic reservoir (1) using MEK (D6). Dry with wiping rag (D53).

INSPECT

2. Inspect reservoir strainer (2) and vent screen (3) for rust, corrosion in accordance with TM 43-0105 cleanliness, cuts, and breaks.

3. Inspect reservoir (1) for possible leaks and check filler cap (4) for proper locking and security.

GO TO NEXT PAGE



406076-99

7-7-8 CLEAN, INSPECT AND REPAIR HYDRAULIC RESERVOIR (CONT)

4 Inspect drain plug (5) for proper locking and security.

5 Inspect return port union (6) for security and possible leakage.

6 Inspect sight gage (7) for cracks and discoloration.

REPAIR

7 Replace defective sight gage (7) (Task 7-7-5).

8 Replace defective cover latch (8) (Task 7-7-3).

9 Replace damaged or unserviceable gasket (9), packing (10), lockpin (11), hinge pin (12) or union (6) (Tasks 7-7-2, 7-7-4, 7-7-6 and 7-7-7).

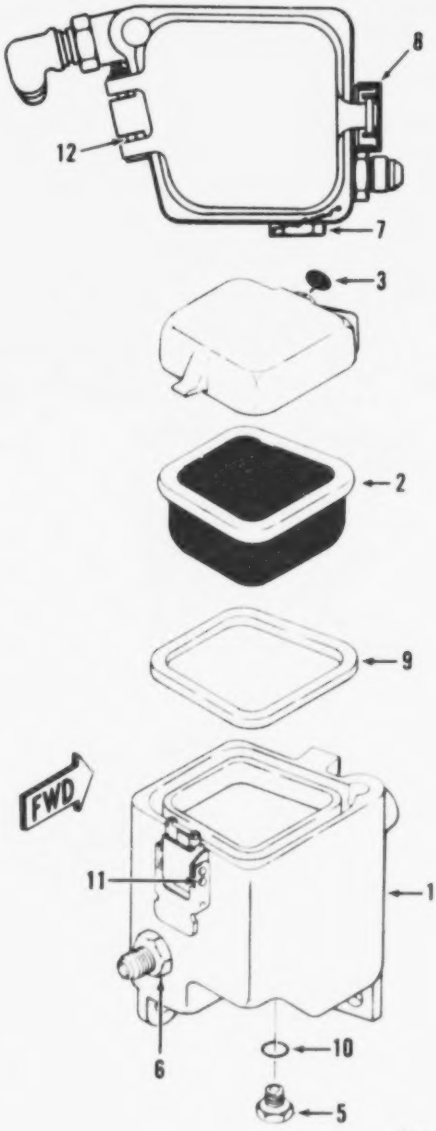
10 Replace unserviceable strainer (2) (Task 7-7-6).

11 Replace unserviceable vent screen (3) (Task 7-7-7).

12 Hydraulic reservoir (1) corrosion pitting should be removed with sandpaper (D10), or a hand buffing wheel may be used. If depth of the repaired area exceeds 0.020 inch, replace reservoir (1) (Task 7-7-1).

13 Treat repaired magnesium surfaces with chromic acid (D171) or chrome pickle solution (D172). Thoroughly rinse with clean water and dry completely. Refer to TM 55-1500-204-25/1.

14 Touch up exterior surface with polyamide epoxy primer (D13).



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END OF TASK

Section VIII. HYDRAULIC PUMP

This section consists of removal, cleaning, inspection, repair, installation and flushing of the hydraulic system.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Hydraulic Pump	7-8-1	7-74
Clean, Inspect and Repair Hydraulic Pump	7-8-2	7-78
Flush Contaminated Hydraulic System	7-8-3	7-80

7-8-1. REMOVE/INSTALL HYDRAULIC PUMP

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Open End Wrench, One Inch

Parts:

Packings (3)
Retainer
Gasket

Materials:

Hydraulic Fluid (D35)
Grease (D15)
Lockwire (D4)
Wiping Rags (D53)

Personnel Required:

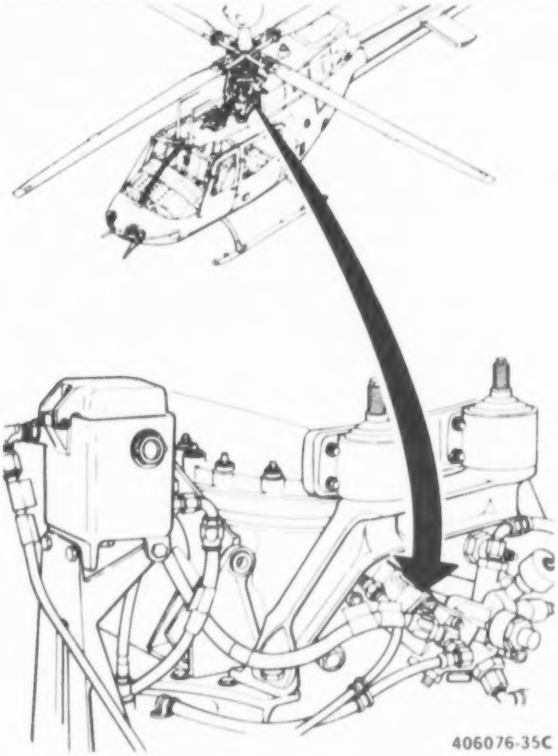
66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF



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7-8-1 REMOVE/INSTALL HYDRAULIC PUMP (CONT)

REMOVE

1. Position maintenance platform on left side of transmission.

2. Place suitable container under drain plug (1). Cut lockwire from drain plug (1) in hydraulic reservoir (2). Remove plug and drain fluid into suitable container. Discard fluid.

3. Install new packing (3) on drain plug (1). Install drain plug (1) and lockwire (D4).

4. Place container under hydraulic pump (4) to catch fluid when hose assemblies are disconnected.

5. Hold union (5) and disconnect pressure line hose (6).

6. Hold union (7) and disconnect suction line hose (8).

7. Hold elbow (9) and disconnect case drain hose (10).

8. Remove four nuts (11) and four washers (12) securing hydraulic pump (4) to transmission adapter housing (13).

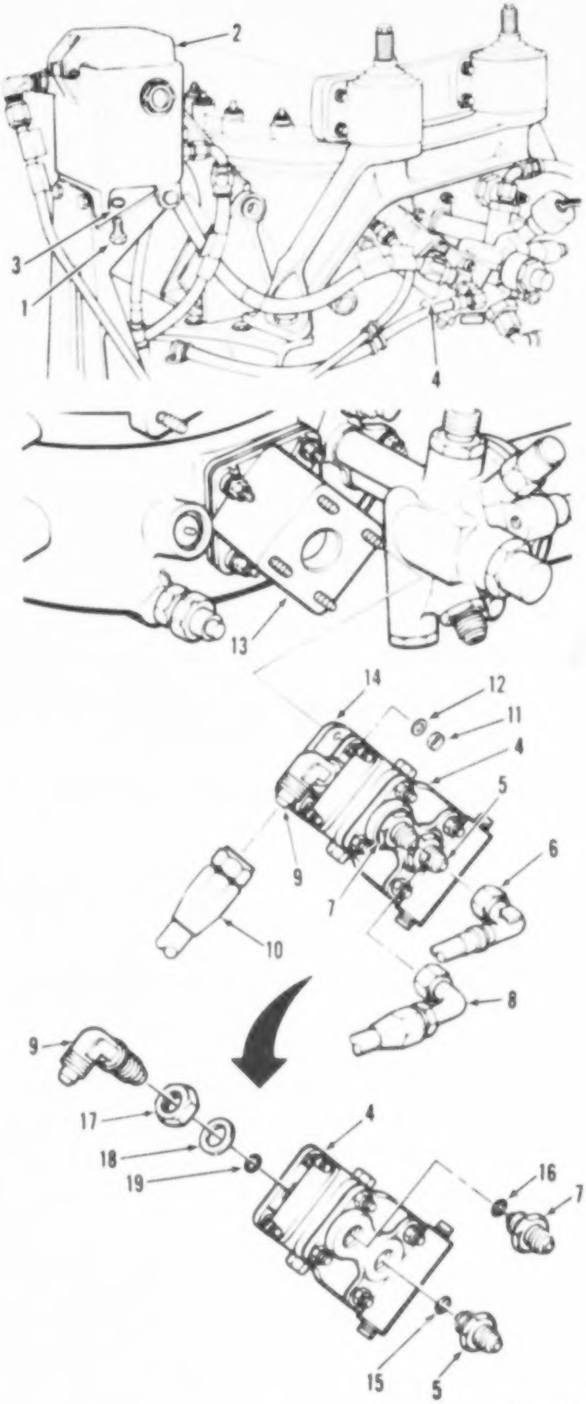
9. Remove pump (4) with gasket (14) and discard gasket (14).

10. Remove unions (5 and 7) with packings (15 and 16). Discard packings (15 and 16).

11. Loosen nut (17) and remove elbow (9) with nut (17), retainer (18), and packing (19). Discard packing (19) and retainer (18).

INSPECT

12. Inspect all hose assemblies for damage and leakage.



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13. Inspect mating splines of hydraulic pump.

14. Inspect for damage corrosion, or distorted threads on fittings and hose assemblies.

15. Cap hoses and pump ports.

INSTALL

16. Remove shipping plugs and allow preservative fluid to drain from hydraulic pump.

17. Lubricate packing (15) and threads of union (5) with hydraulic fluid (D35).

18. Install packing (15) on union and install union (5) in pump (4).

19. Lubricate packing (16) and threads of union (7) with hydraulic fluid (D35).

20. Install packing (16) on union and install union (7) in pump (4).

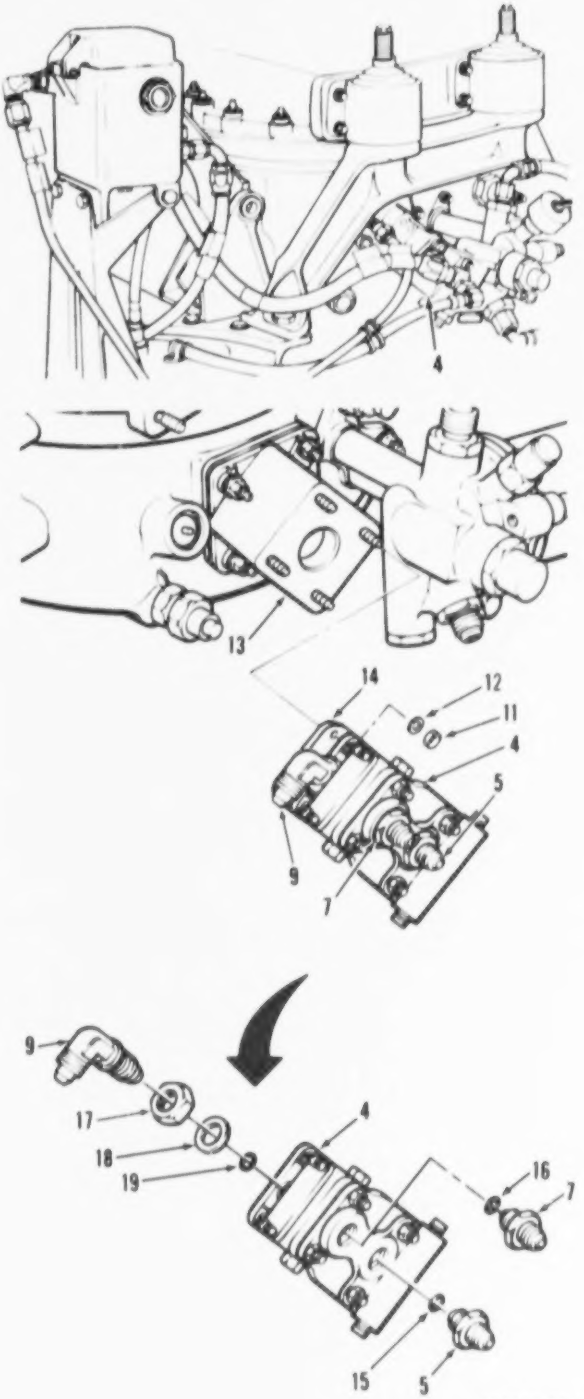
21. Lubricate packing (19), threads on nut (17) and elbow (9) with hydraulic fluid (D35).

22. Fill pump case with hydraulic fluid (D35).

23. Loosely install nut (17), retainer (18), and packing (19) on elbow (9). Install elbow in pump (4).

24. Apply a thin coating of grease (D15) to splines of pump and to mating splines of hydraulic pump driveshaft assembly.

25. Install gasket (14) and pump (4) on transmission pump adapter housing (13). Secure with four washers (12) and four nuts (11).



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406076-89-1

26. Remove cap from case drain hose (10) lubricate threads of elbow (9) with hydraulic fluid (D35) and align elbow with drain hose (10).

CAUTION

> Check valve in case drain line at return manifold must be installed with arrow pointing away from pump. Improper installation (backward) will cause the pump to overheat and can result in precautionary or forced landings.

27. Tighten hose (10) and locknut (17).

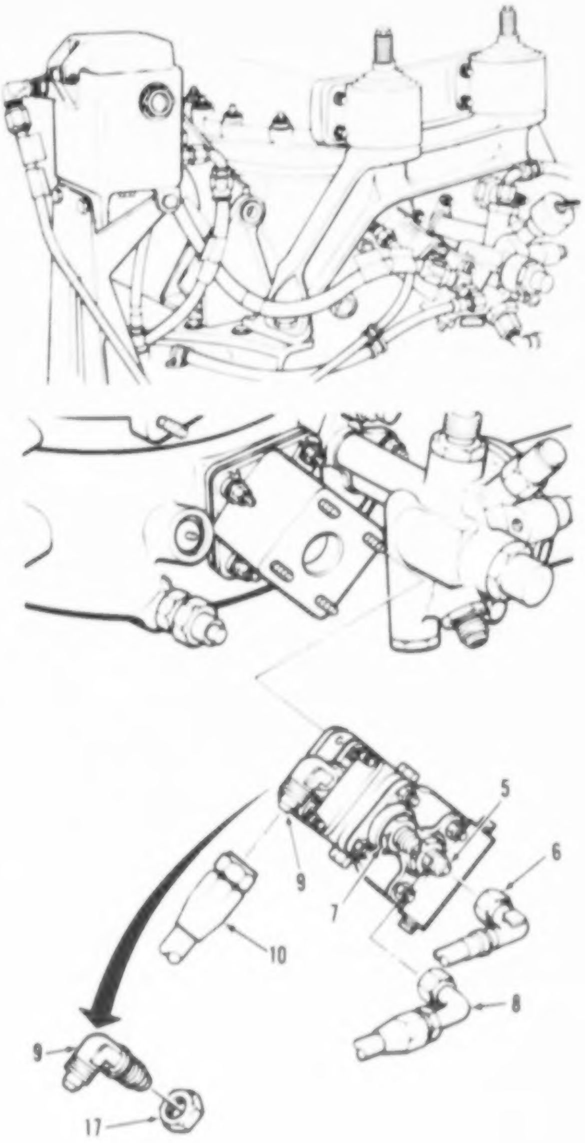
28. Remove cap from suction line hose (8) and lubricate threads of union (7) with hydraulic fluid (D35).

29. Start hose (8) by hand, hold union (7) and tighten hose (8).

30. Remove cap from pressure line hose (6) and lubricate threads of union (5) with hydraulic fluid (D35).

31. Start hose (6) by hand, hold union (5) and tighten hose (6).

32. Clean area with wiping rags (D53).



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INSPECT

FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-8-2. CLEAN, INSPECT AND REPAIR HYDRAULIC PUMP

This task covers: Cleaning, Inspection and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Maintenance Platform
Aircraft Mechanic Tool Kit
Compressed Air Source

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)

Personnel Required:

67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

CLEAN

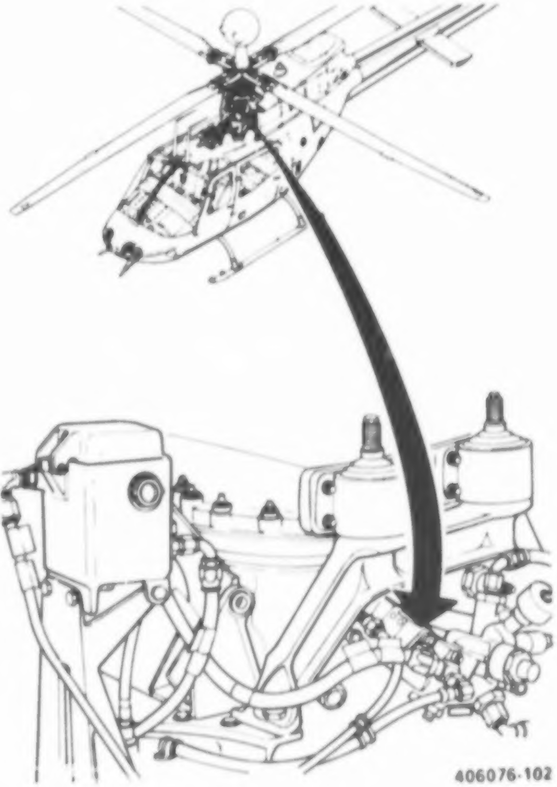
WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear goggles and gloves(D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean hydraulic pump with drycleaning solvent (D1). Dry with moisture-free compressed air at approximately 20 psi pressure.

WARNING

Compressed air is dangerous when directed toward yourself or another person. Use goggles to protect eyes and face. Do not exceed 30 psig. Do not direct airstream toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.



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GO TO NEXT PAGE

7-8-2 CLEAN, INSPECT AND REPAIR HYDRAULIC PUMP (CONT)

INSPECT

2 Inspect hydraulic pump for leakage (Leakage rate criteria (Task 7-1-1)

3 Inspect hydraulic pump for security of installation

4 Inspect hydraulic pump for cracked housing

5 Ensure plugs and screws are properly lockwired

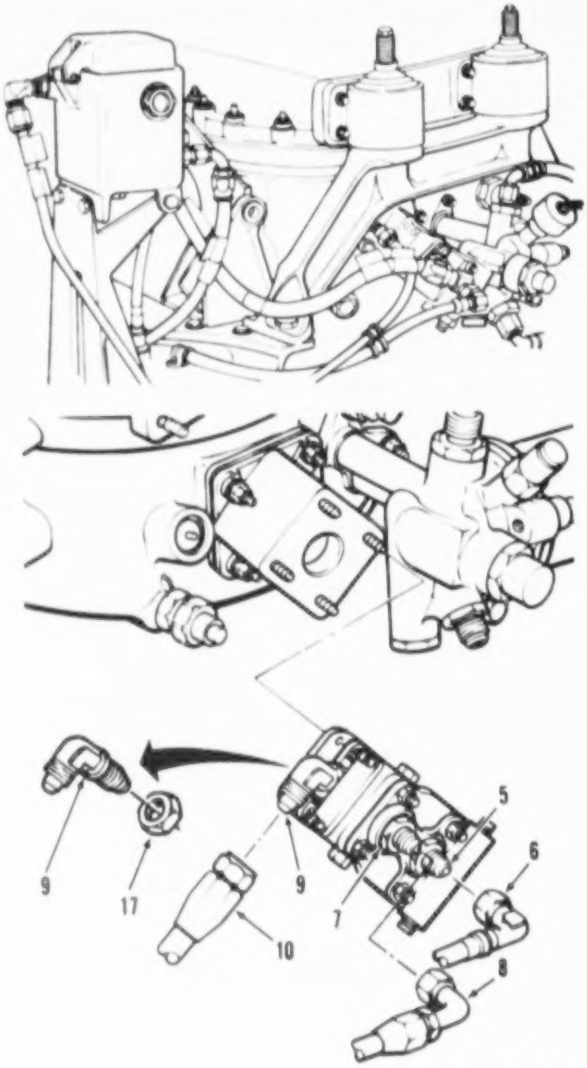
6 Inspect connecting lines and hose for security and leakage

REPAIR

7 Replace defective hydraulic pump (Task 7-8-1)

FOLLOW-ON MAINTENANCE

Install forward fairing assembly (Task 2-1-21)



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END OF TASK

7-3-3 FLUSH CONTAMINATED HYDRAULIC SYSTEM

This task covers: Flushing (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Test Stand, Portable Hydraulics
Open End Wrench, One Inch

Parts:

Filter Elements (2)
Reducer P/N MS21916D5-4
Union P/N MS21902D4

Materials:

Hydraulic Fluid (D35)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

References:

TM 55-1520-248-MTF

GO TO NEXT PAGE

7-8-3. FLUSH CONTAMINATED HYDRAULIC SYSTEM (CONT)

1. Move maintenance platform in position to gain access to right side of roof forward of the transmission.

PREPARE

2. Remove and discard the filter elements (Task 7-3-2).

3. Immediately install filter bowls without elements.

NOTE

If flushing hydraulic system due to metal contamination or failed hydraulic pump, complete step 4. If not, proceed to step 5.

4. Replace hydraulic pump (Task 7-8-1).

NOTE

Reservoir shall be drained and flushed with clean hydraulic fluid (D35) before proceeding.

5. Disconnect hose (1) from union (2) on right servoactuator (3). Cap union (2).

6. Disconnect end of hose (4) from elbow (5) on right servoactuator (3). Cap elbow (5).

7. Connect hose (1) to hose (4) using a reducer (6).

8. Disconnect hose (7) from tee (8) on center servoactuator (9). Cap end of tee (8).

9. Disconnect end of hose (10) from other side of tee (8). Cap tee (8).

10. Connect hose (7) to hose (10) using a union (11).

11. Disconnect hose (12) from elbow (13). Cap elbow (13).

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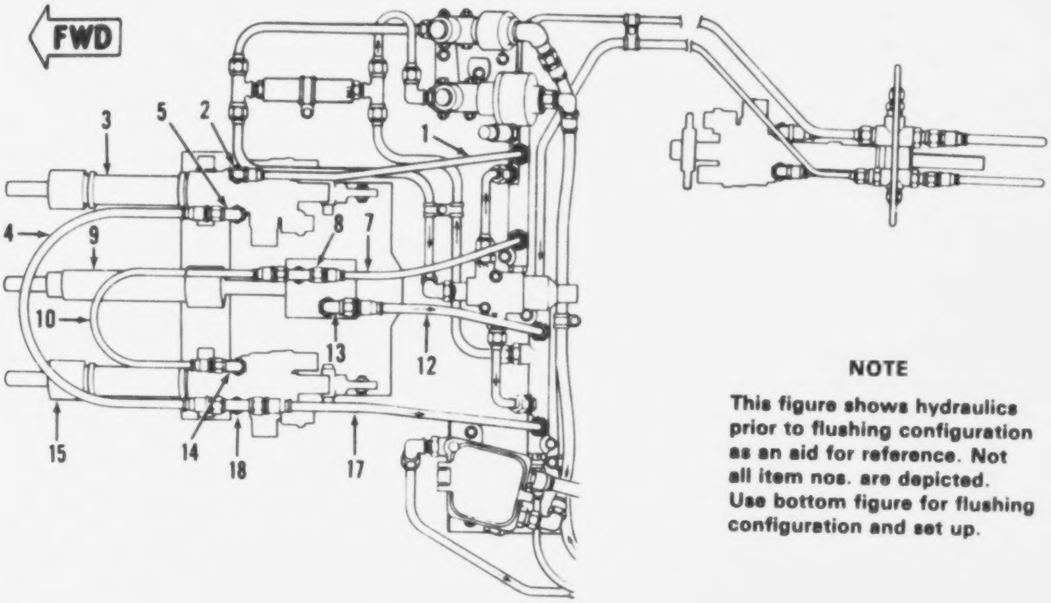
7-8-3. FLUSH CONTAMINATED HYDRAULIC SYSTEM (CONT)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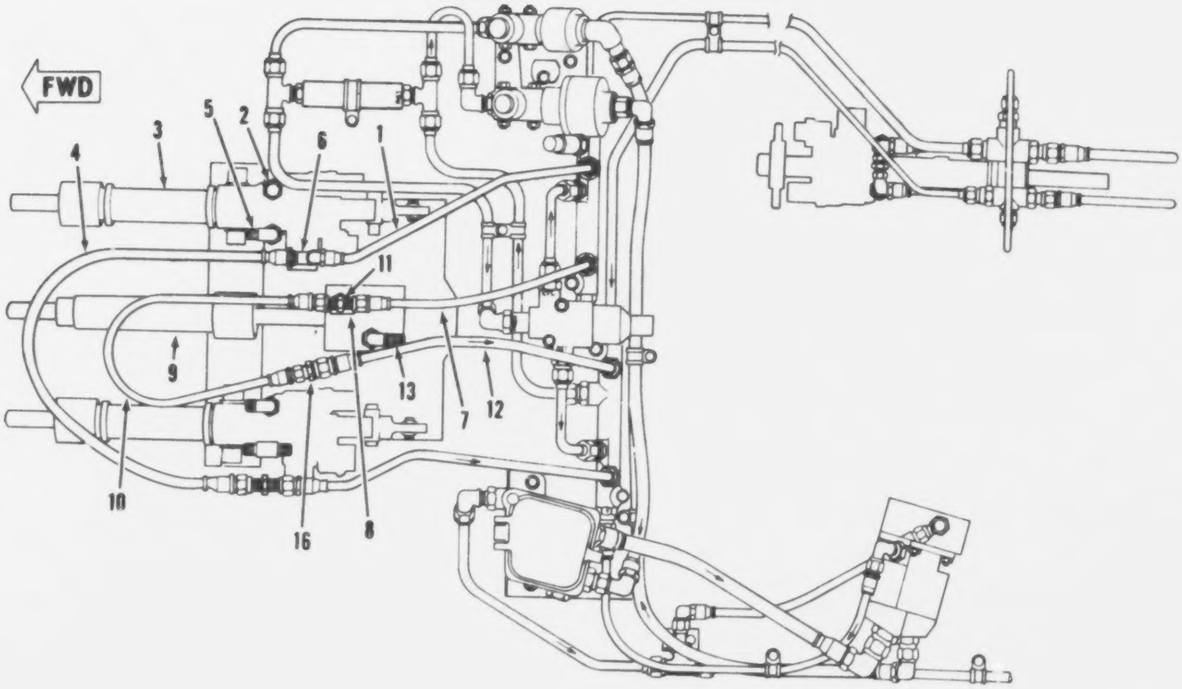
NOTE

This figure shows hydraulics prior to flushing configuration as an aid for reference. Not all item nos. are depicted. Use bottom figure for flushing configuration and set up.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7-8-3 FLUSH CONTAMINATED HYDRAULIC SYSTEM (CONT)

12. Disconnect hose (10) from elbow (14) on left servoactuator (15). Cap elbow (14).

13. Connect hose (10) to hose (12) using a reducer (16).

14. Disconnect hose (17) from end of tee (18) on left servoactuator (15).

15. Disconnect hose (4) from other end of tee (18). Cap tee.

16. Connect hose (4) to hose (17) using a union (19).

17. Disconnect hose (20) from union (21) on directional actuator (22). Cap union (21).

18. Disconnect hose (23) from union (24). Cap union (24).

19. Connect hose (23) to hose (20) using a reducer (25).

20. Disconnect quick-disconnect coupling halves (26 and 27).

21. Connect hydraulic test stand to quick-disconnect coupling (male) halves (28 and 29).

22. Inspect hydraulic system to ensure that flushing components and hose are securely attached.

FLUSH

NOTE

Assure test stand is serviced with same type fluid as used in helicopter system.

23. Set hydraulic test stand to provide a flow rate of 3.0 ± 1/2 GPM using a pressure setting of 1000 PSI to maintain flow through helicopter hydraulic system for a minimum of 5 minutes to flush out system. Operate shutoff valve a minimum of 3 times during the 5 minutes.

24. Inspect all portions of system for evidence of leakage throughout the flushing operation.

25. Shut down hydraulic test stand.

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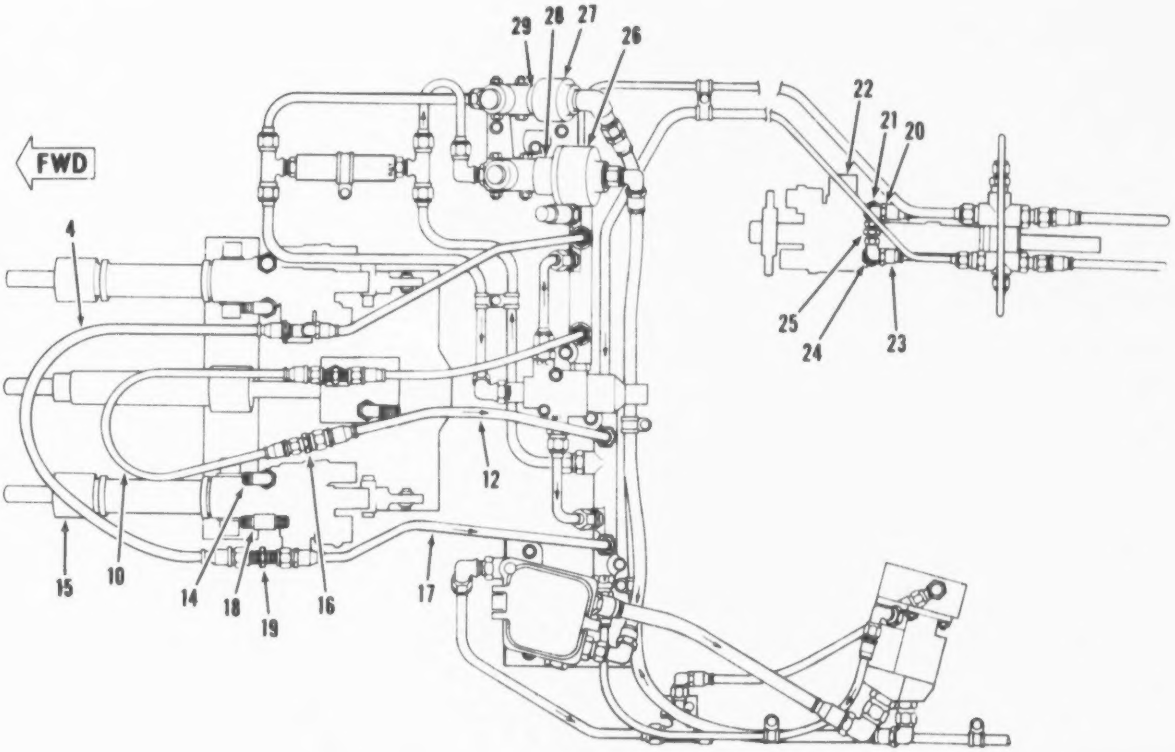
7-8-3. FLUSH CONTAMINATED HYDRAULIC SYSTEM (CONT)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GO TO NEXT PAGE

DISCONNECT/CONNECT

26. Disconnect hose (23) and hose (20) from reducer (25). Remove reducer from helicopter.

27. Remove cap from union (24) on directional actuator (22) and connect hose (23) to union (24).

28. Remove cap from union (21) on directional actuator (22) and connect hose (20).

29. Disconnect hose (4) and hose (17) from union (19). Remove union from helicopter.

30. Remove caps from tee (18) on left servo-actuator (15). Connect one end of hose (4) to forward side of tee (18) and connect hose (17) to other side of tee (18).

31. Disconnect hose (10) and hose (12) from reducer (16). Remove reducer (16) from helicopter.

32. Remove cap from elbow (14) on left servo-actuator (15). Connect one end of hose (10) to elbow (14).

33. Remove cap from elbow (13) on center servo-actuator (9). Connect hose (12) to elbow (13).

34. Disconnect hose (7) and hose (10) from union (11). Remove union (11) from helicopter.

35. Remove caps from tee (8) on center servo-actuator (9). Connect hose (7) to aft side of tee (8) and connect loose end of hose (10) to forward end of tee (8).

36. Disconnect hose (1) and hose (4) from reducer (6). Remove reducer (6) from helicopter.

37. Remove cap from elbow (5) on right servo-actuator (3). Connect hose (4) to elbow (5).

38. Remove cap from union (2) and connect hose (1) to union.

39. Remove caps and clean area.

CHECK

40. Set the hydraulic test stand pump to provide a minimum flow of 3.0 GPM with pressure compensator adjusted to 1000 psig.

41. Cycle cyclic, collective and tail rotor controls.

42. Check for leaks.

43. Shut down hydraulic test stand.

44. Remove the filter bowls and drain fluid.

45. Check new elements for defects.

46. Install new filter elements (Task 7-3-2).

INSPECT

47. Disconnect hydraulic test stand couplings from helicopter male quick-disconnect coupling halves (28 and 29).

48. Connect quick-disconnect couplings (26 and 27).

49. Clean area using wiping rag (D53).

INSPECT

FOLLOW-ON MAINTENANCE

Service reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).

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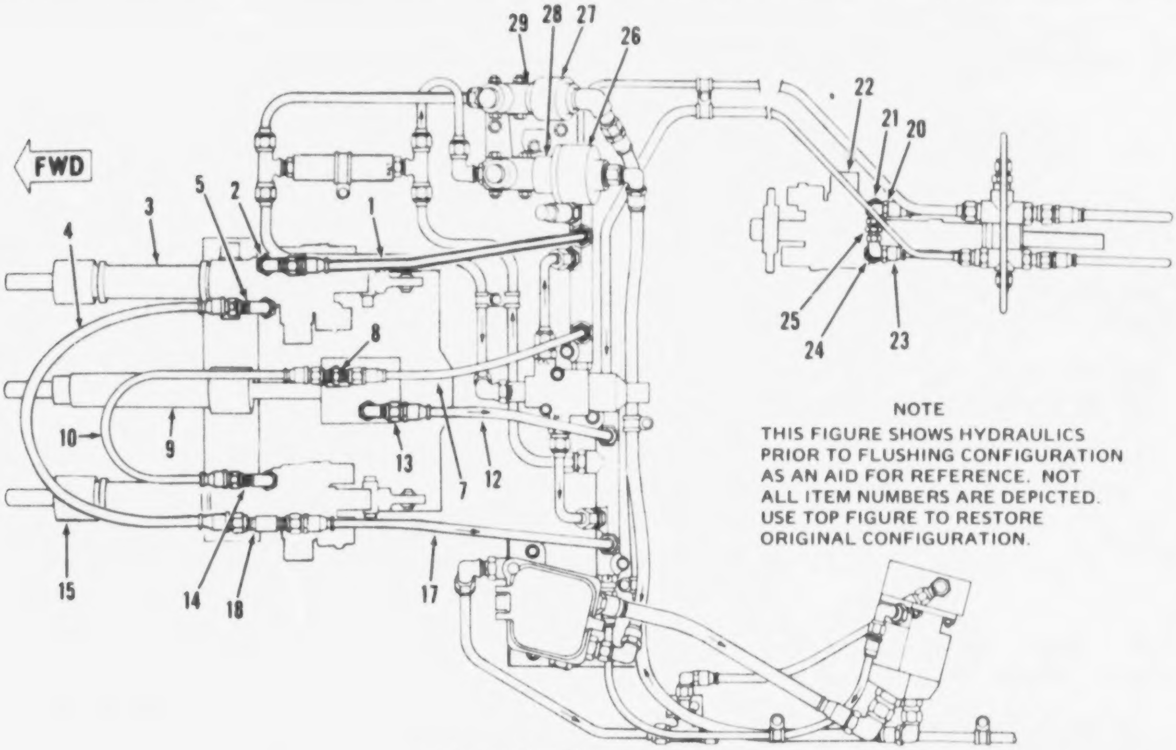
7-8-3. FLUSH CONTAMINATED HYDRAULIC SYSTEM (CONT)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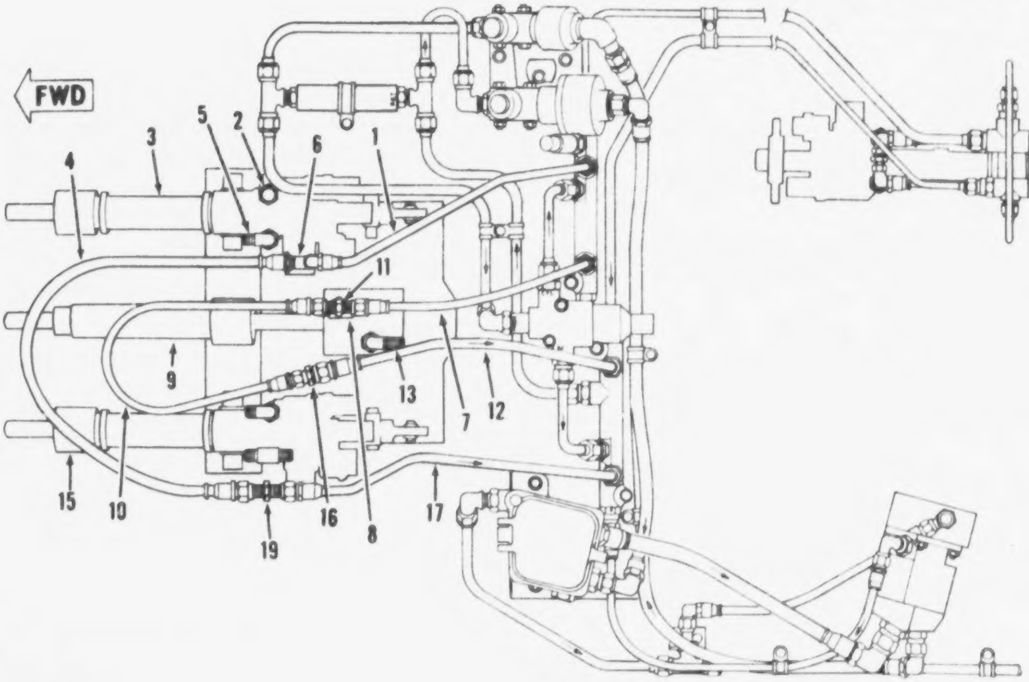
NOTE

THIS FIGURE SHOWS HYDRAULICS PRIOR TO FLUSHING CONFIGURATION AS AN AID FOR REFERENCE. NOT ALL ITEM NUMBERS ARE DEPICTED. USE TOP FIGURE TO RESTORE ORIGINAL CONFIGURATION.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END OF TASK

Section IX. ACTUATORS

This section covers, removal, cleaning, inspection, repair, and installation of the collective, cyclic, and directional actuators

LIST OF TASK

TASK	TASK NUMBER	PAGE NUMBER
Remove/Install Directional Control Servoactuator	7-9-1	7-88
Clean, Inspect and Repair Cyclic, Collective and Directional Control Servoactuator (Typical)	7-9-2	7-91
Remove/Install Servo Trunnion Bearing	7-9-3	7-93
Clean, Inspect and Repair Trunnion Bearing	7-9-4	7-95
Remove/Install Bushings	7-9-5	7-97
Clean, Inspect and Repair Bushing	7-9-6	7-99
Remove/Install Clevis Adapter	7-9-7	7-100
Clean, Inspect and Repair Clevis Adapter	7-9-8	7-102
Remove/Install Collective Hydraulic Actuator	7-9-9	7-105
Remove/Install Cyclic Hydraulic Actuator	7-9-10	7-108

7-9-1 REMOVE/INSTALL DIRECTIONAL CONTROL SERVOACTUATOR

This task covers: Removal/Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 30-150 Inch-Pounds

Parts:

Cotter Pin (3)
Nut

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

References:

TM 55-1520-248-MTF

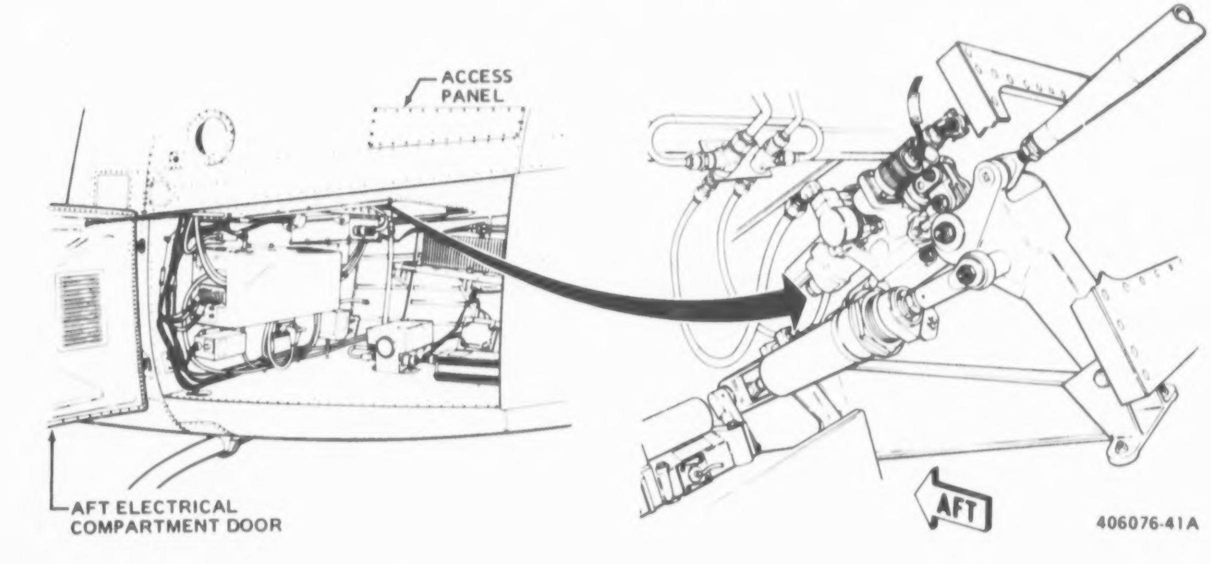
General Safety Instructions:

WARNING

Ensure that no one operates controls from inside of helicopter during removal of directional control servoactuator. Physical injury can occur. If injury occurs, seek medical aid.

CAUTION

Do not operate directional controls during servoactuator removal. Damage to servoactuator could occur.



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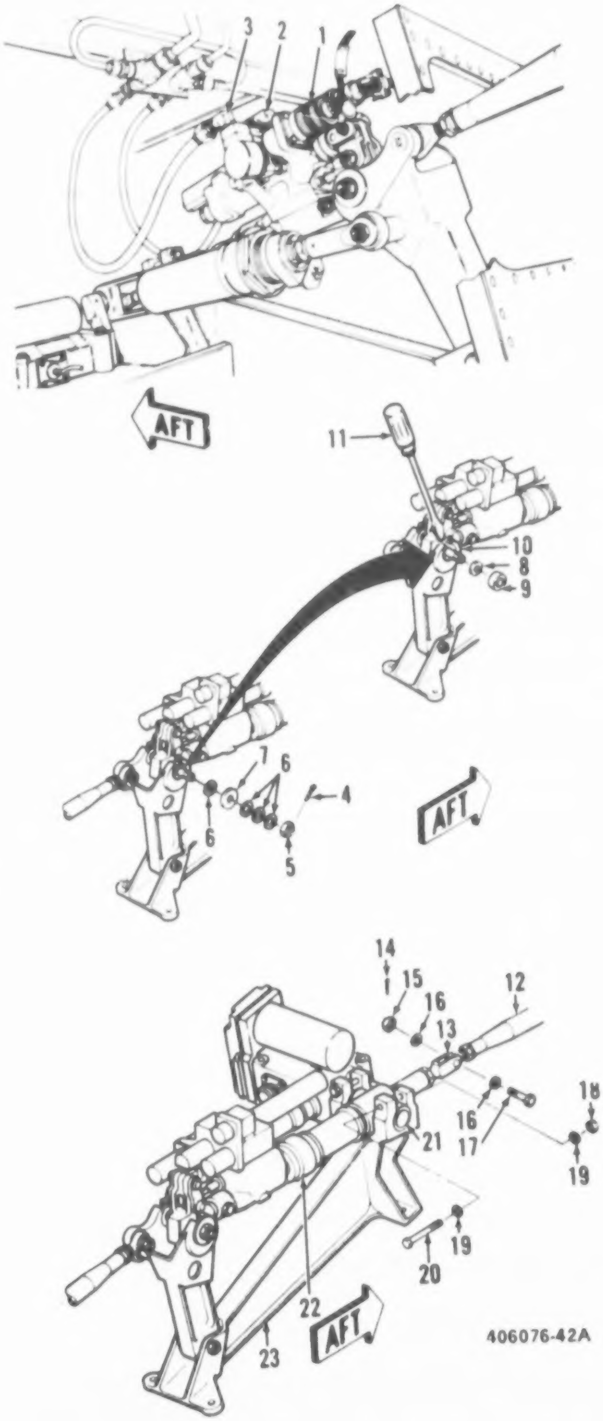
7-9-1. REMOVE/INSTALL DIRECTIONAL CONTROL SERVOACTUATOR (CONT)



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REMOVE

1. Open aft electrical compartment door and access panel.

NOTE

The aft electrical compartment door or the access door can be used to gain access to directional control servoactuator.

2. Disconnect and cap two electrical connectors (1).

3. Disconnect and cap hydraulic pressure line (2) and return line (3).

4. Remove trunnion bearing by removing cotter pin (4), nut (5), four washers (6), and thrust washer (7). Push spacer (8) and bearing (9) out of idler (10) using flat-tip screwdriver (11).

5. Repeat step 4. for opposite trunnion.

6. Disconnect boosted tube (12) from adapter clevis (13) by removing cotter pin (14), nut (15), two washers (16) and bolt (17). Discard cotter pin.

7. Remove two nuts (18), four washers (19) and two bolts (20). Rotate bushings (21) 90 degrees and lift actuator (22) from support (23); remove two bushings (21). Withdraw actuator from helicopter.

GO TO NEXT PAGE

7-9-1. REMOVE/INSTALL DIRECTIONAL CONTROL SERVOACTUATOR (CONT)

INSTALL

CAUTION

> Self-locking castellated nuts shall be safetied with cotter pin. Nonmetallic insert is not primary safetying feature of these nuts. Test nuts by inserting matching bolt by hand. Reuse only those nuts that cannot be tightened down with fingers after locking action engages bolt.

8. Install bushings (21) on actuator (22) trunnion. Position actuator in support (23) and rotate bushings 90 degrees. Secure actuator to support (23) with two bolts (20), four washers (19) and two nuts (18). Torque nut (18) **75-95 INCH-POUNDS.**

9. Connect boosted tube (12) to adapter clevis (13) with bolt (17), two washers (16), and nut (15). Torque nut (15), **30-40 INCH-POUNDS,** and secure with cotter pin (14).

10. Connect actuator (22) to idler (10) with two spacers (8), two bearings (9), eight washers (6), two thrust washers (7) (treated surface towards idler), and two nuts (5). Install washers (6) in any sequence to provide 0.015 to 0.060 inch gap between idler (10) and thrust washer (7). Torque nuts (5) **60-80 INCH-POUNDS** and secure with two cotter pins (4).

11. Remove caps and connect hydraulic return line (3) and pressure line (2).

12. Remove caps and connect two electrical connectors (1).

INSPECT

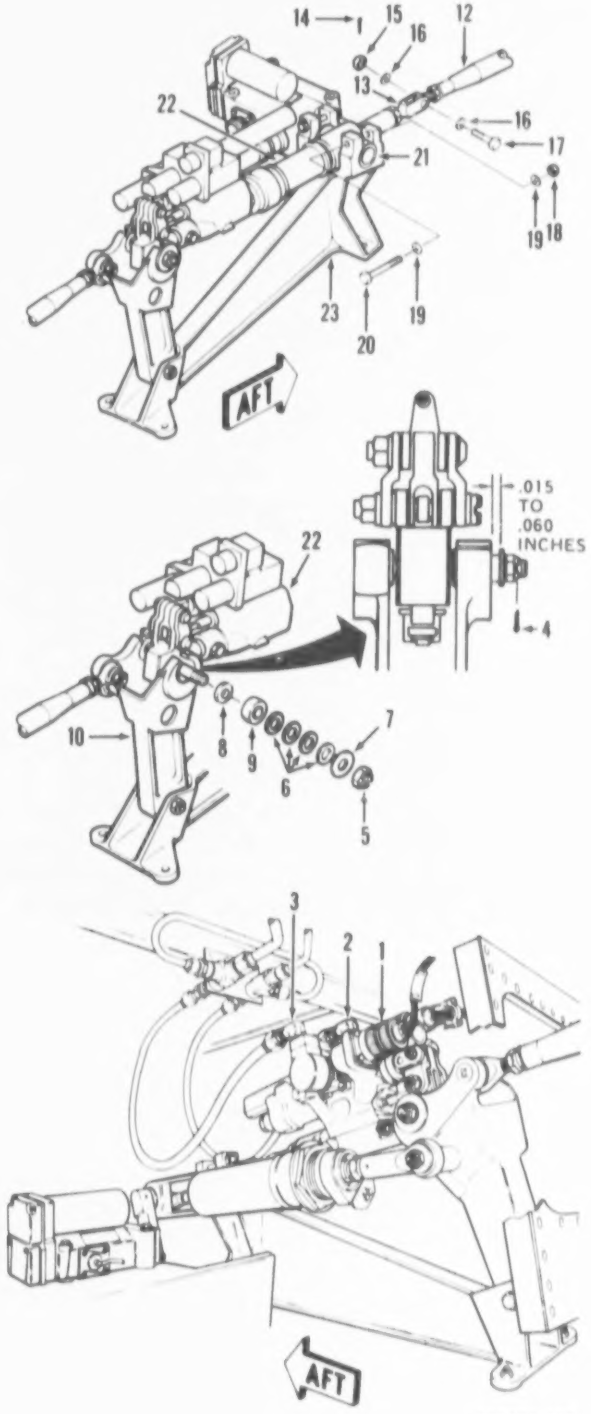
13. Close aft electrical compartment door and access panel.

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK



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7-9-2 CLEAN, INSPECT AND REPAIR CYCLIC, COLLECTIVE AND DIRECTIONAL CONTROL SERVOACTUATOR (TYPICAL)

This task covers: Cleaning, Inspection and Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Parts:

Packing (2)

Materials:

Rubber Gloves (D119)
Drycleaning Solvent (D1)
Wiping Rags (D53)
Hydraulic Fluid (D35)
Cleaning Cloth (D56)
Crocus Cloth (D8)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

7-9-2. CLEAN, INSPECT AND REPAIR CYCLIC, COLLECTIVE AND DIRECTIONAL CONTROL SERVOACTUATOR (TYPICAL) (CONT)

CLEAN

1. Clean exterior of servoactuator with wiping rag (D53) and drycleaning solvent (D1). Avoid contacting exposed portion of servo extension shaft.

2. Clean exposed portion of servo extension shaft with a cleaning cloth (D56) moistened with hydraulic fluid (D35).

INSPECT

3. Inspect servoactuator for cracks and other signs of obvious damage. No obvious damage allowed.

4. Inspect servoactuator sloppy link bolts for freedom of rotation (must rotate with finger pressure).

5. Inspect pressure line union and return line reducer for damaged threads and leakage.

6. Inspect exposed portion of actuator rod for cracks, scoring and corrosion. Leakage rate criteria (Task 7-1-1).

REPAIR

7. Polish sloppy link bolts that fail inspection with crocus cloth (D8). If damage cannot be removed with crocus cloth, replace bolt.

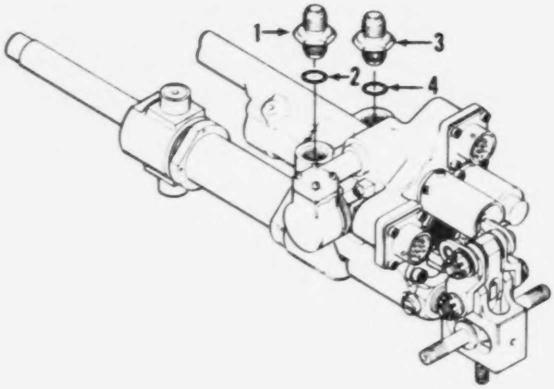
8. Replace pressure line and return union packings that leak. Leakage rate criteria (Task 7-1-1).

9. Remove return line reducer (1) and packing (2).

10. Remove pressure line union (3) and packing (4).

11. Install pressure line union (3) with serviceable packing (4).

12. Install return line reducer (1) with serviceable packing (2).



406076-43

13. Replace servoactuator that does not meet inspection requirements.

INSPECT

END OF TASK

7-9-3 REMOVE/INSTALL SERVO TRUNNION BEARING

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 30-150 Inch-Pounds

Parts:

Bearing (2)
Cotter Pin (2)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

References:

TM 55-1520-248-MTF

General Safety Instructions:

WARNING

Ensure that no one operates controls from inside of helicopter during replacement of servo trunnion bearing. Physical injury can occur. If injury occurs, seek medical aid.

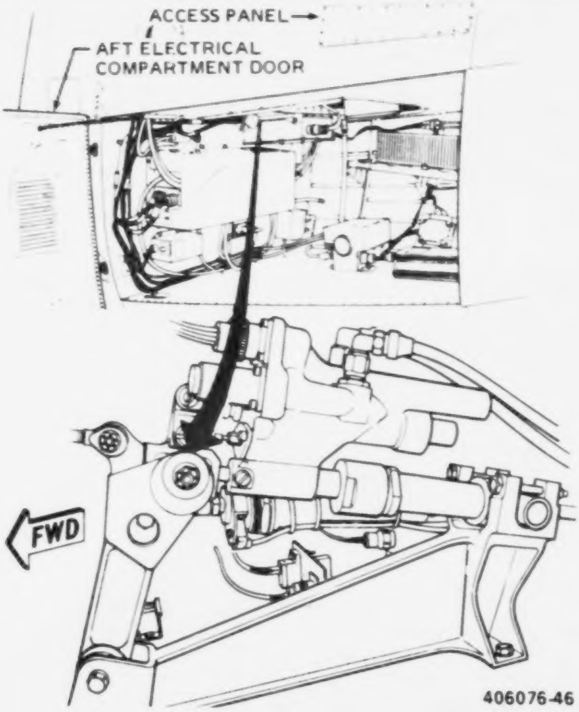
CAUTION

Do not operate directional controls during trunnion bearing replacement. Damage to servoactuator could occur.

1. Open aft electrical compartment door and access panel.

NOTE

The aft electrical compartment or the access door can be used to gain access to directional control servoactuator.



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7-9-3. REMOVE/INSTALL SERVO TRUNNION BEARING (CONT)

REMOVE TRUNNION BEARINGS

2. Remove trunnion bearing by removing cotter pin (1), nut (2), washer (3), washer (4), and three washers (5). Push spacer (6) and bearing (7) out of idler (8) using flat-tip screwdriver (9).

3. Repeat step 2. for opposite trunnion.

INSTALL TRUNNION BEARINGS

4. Install spacer (6), replacement bearing (7), three washers (5), thrust washer (4) (treated surface towards idler) and washer (3) on trunnion (10).

5. Install washers (5) in any sequence to provide 0.015 to 0.060 inch gap between thrust washer (4) and idler (8). Check with feeler gage.

6. Install nut (2).

7. Torque nut (2) **60-80 INCH-POUNDS** and secure with cotter pin (1). Check trunnion for free movement without binding.

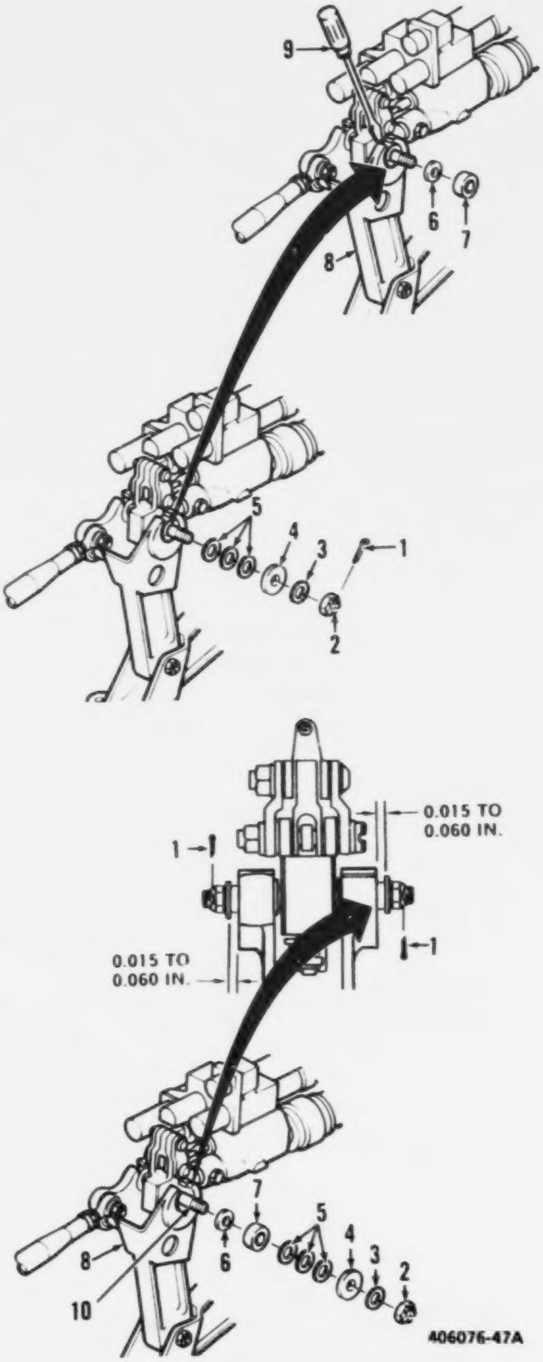
8. Repeat steps 4., 5., 6., and 7. for opposite trunnion.

INSPECT

9. Close aft compartment door and access panel.

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF).



END OF TASK

7-9-4. CLEAN, INSPECT AND REPAIR TRUNNION BEARING

This task covers: Cleaning, Inspection and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Nonmetallic Brush

Materials:

Drycleaning Solvent (D1)
Grease (D15)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

References:

TM 43-0105

CLEAN

WARNING

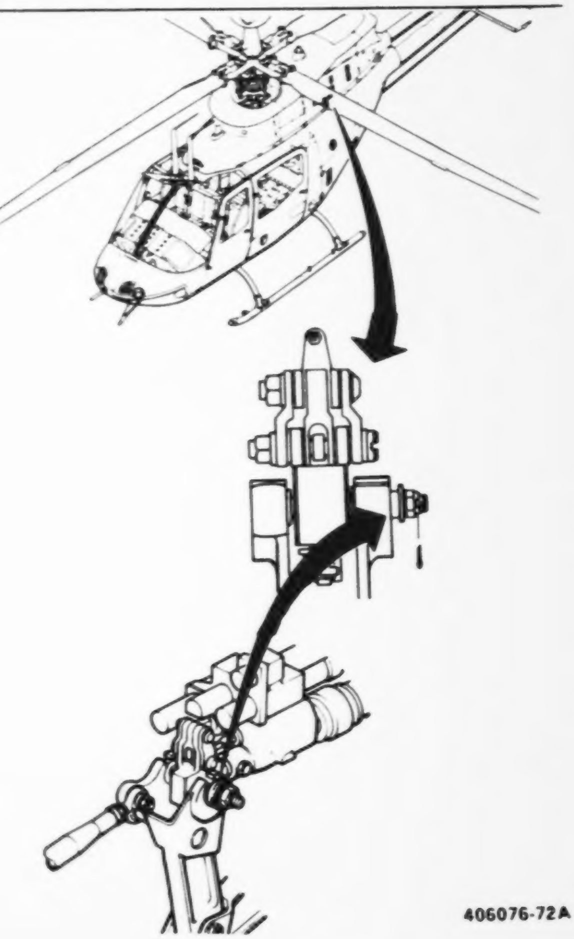
Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in a well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean trunnion bearing using drycleaning solvent (D1) and nonmetallic brush; and let air dry.

INSPECT

2. Inspect trunnion bearing for smoothness and freedom of rotation by holding inner race and rotating outer race by hand.

3. Inspect trunnion bearing for spalling, scoring, brinelling, looseness or corrosion damage in accordance with TM 43-0105.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7-9-4. CLEAN, INSPECT AND REPAIR TRUNNION BEARING (CONT)

4. Inspect trunnion bearing for maximum wear limits of 0.005 inch radial, and 0.030 inch axial.

REPAIR

5. Hand pack trunnion bearing with grease (D15) until grease comes out other side. Wipe off excess grease.

6. No repair authorized. Replace trunnion bearing if inspection requirements are not met.

END OF TASK

7-9-5 REMOVE/INSTALL BUSHINGS

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 30-150 Inch-Pounds

Parts:

Cotter Pin
Bushing (2)

Personnel Required:

66S Scout Helicopter Technical Inspector
68H Aircraft Pneudraulics Repairer
Pilot

References:

TM 55-1520-248-MTF

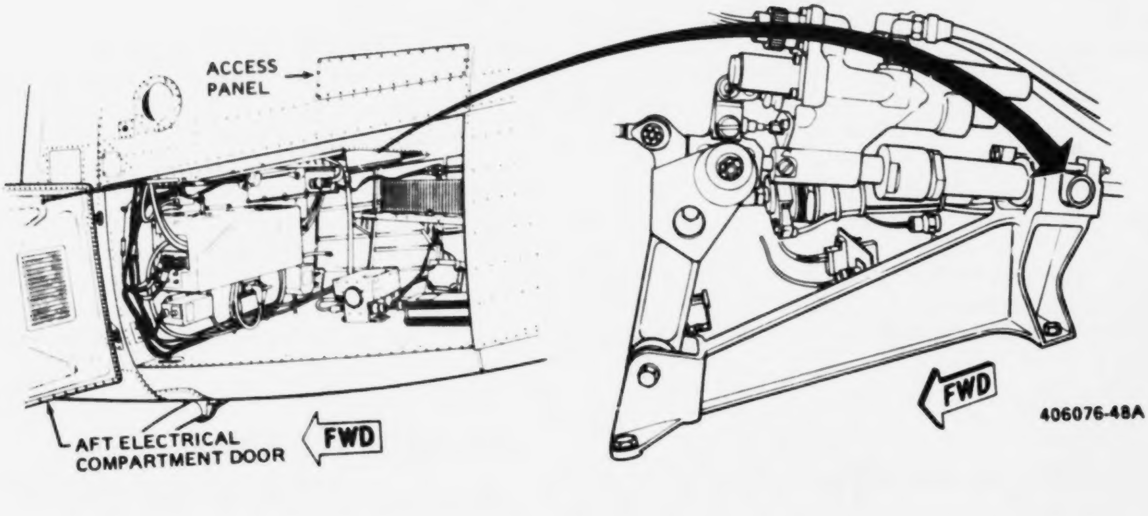
General Safety Instrunctions:

WARNING

Ensure that no one operates controls from inside of helicopter during replacement of actuator trunnion bushings. Physical injury can occur. If injury occurs, seek medical aid.

CAUTION

Do not operate directional controls during servo repair. Damage to servoactuator could occur.



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7-9-5. REMOVE/INSTALL BUSHINGS (CONT)

REMOVE

1. Open aft electrical compartment door and access panel.

NOTE

> The aft electrical compartment door or the access door can be used to gain access to directional control servoactuator.

2. Disconnect boosted tube (1) from adapter clevis (2) by removing cotter pin (3), nut (4), two washers (5) and bolt (6). Discard cotter pin.

3. Remove two actuator trunnion bushings (7) by removing two nuts (8), four washers (9) and two bolts (10). Rotate bushings (7) 90 degrees and lift actuator (11) from support (12) and slip off bushings (7).

INSTALL

4. Place replacement bushings (7) on trunnion of actuator (11). Rotate bushings (7) until actuator can be lowered into slot of support (12). Rotate bushings (7) 90 degrees. Flats on bushings (7) to be up for bolt clearance. Secure with two bolts (10), four washers (9) and two nuts (8). Torque nuts (8) **75-95 INCH-POUNDS.**

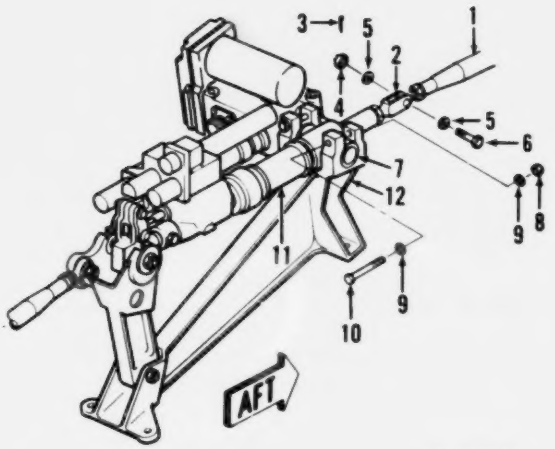
CAUTION

> Self-locking castellated nuts shall be safetied with cotter pin. Nonmetallic insert is not primary safetying feature of these nuts. Test nuts by inserting matching bolt by hand. Reuse only those nuts that cannot be tightened down with fingers after locking action engages bolt.

5. Connect boosted tube (1) to adapter clevis (2) with bolt (6), two washers (5) and nut (4). Torque nut (4) **30-40 INCH-POUNDS** and secure with cotter pin (3).

INSPECT

6. Close aft electrical compartment door and access panel.



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FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM 55-1520-248-MTF).

END OF TASK

7-9-6. CLEAN, INSPECT AND REPAIR BUSHING

This task covers: Cleaning, Inspection and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Nonmetallic Brush

Materials:

Drycleaning Solvent (D1)
Rubber Gloves (D119)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

References:

TM 43-0105

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Check bushing (1) using drycleaning solvent (D1) and nonmetallic brush. Dry with wiping rag (D53).

INSPECT

2. Inspect bushing (1) for wear, damage or looseness in housing. Maximum elongation to bushing holes is not to exceed 0.003 inch.

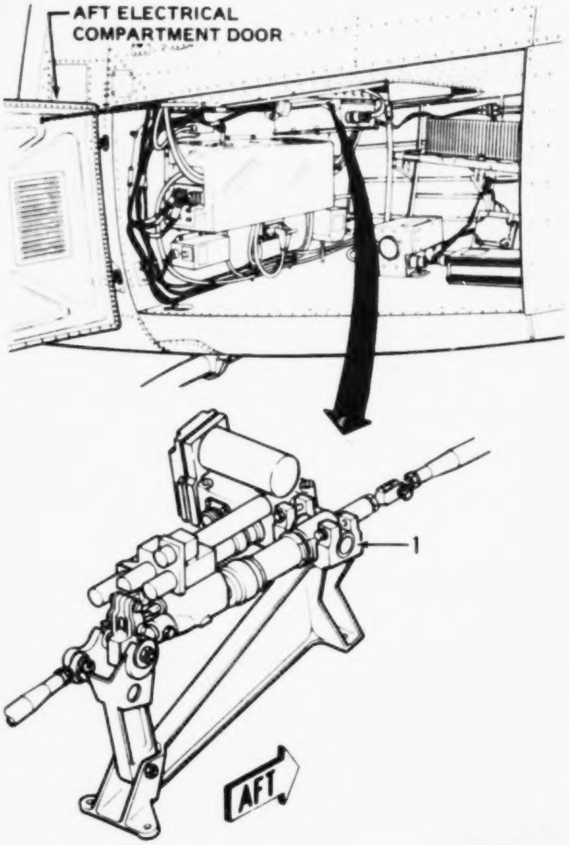
3. Inspect bushing (1) for corrosion damage in accordance with TM 43-0105.

REPAIR

4. No repair authorized. Replace bushing (1) if inspection requirements are not met.

INSPECT

END OF TASK



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7-9-7. REMOVE/INSTALL CLEVIS ADAPTER

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Torque Wrench 30-150 Inch-Pounds

Parts:

Cotter Pin
Nut
Adapter

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

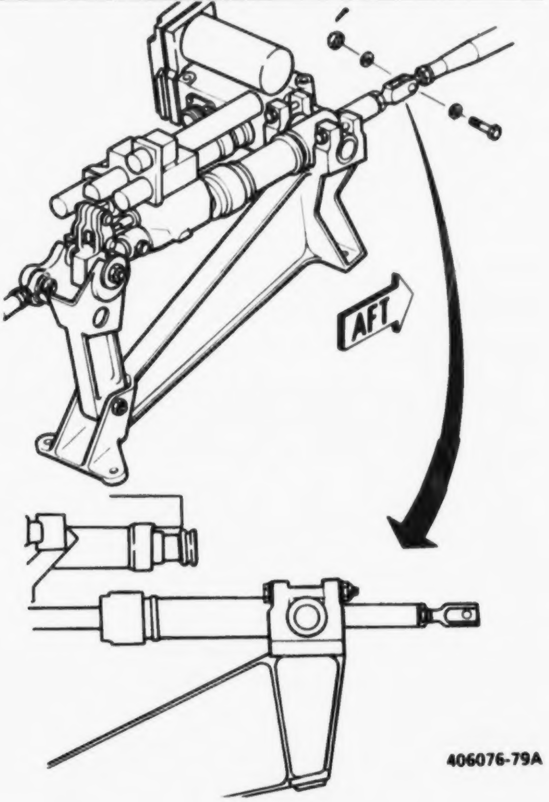
References:

TM 55-1520-248-MTF

General Safety Instructions:

WARNING

Ensure that no one operates controls from inside of helicopter during replacement of actuator adapter. Physical injury can occur If injury occurs, seek medical aid.



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7-9-7. REMOVE/INSTALL CLEVIS ADAPTER (CONT)

REMOVE

1. Open aft electrical compartment door and access panel.

NOTE

> The aft electrical compartment door or the access door can be used to gain access to directional control servoactuator.

2. Disconnect boosted tube (1) from clevis adapter (2) by removing cotter pin (3), nut (4), two washers (5) and bolt (6). Discard cotter pin.

3. Loosen jamnut (7) to clevis adapter (2) and screw out adapter.

INSTALL

4. Install jamnut (7) on replacement clevis adapter (2) and screw clevis adapter into end of actuator (8). Set to dimension of 1.22 inches between end of actuator (8) of centerline of bolt hole in clevis adapter (2). Tighten jamnut (7).

CAUTION

> Self-locking castellated nuts shall be safetied with cotter pin. Nonmetallic insert is not the primary safetying feature of these nuts. Test nuts by inserting matching bolt by hand. Reuse only those nuts that cannot be tightened down with fingers after locking action engages bolt.

5. Connect boosted tube (1) to clevis adapter (2) with bolt (6), two washers (5) and nut (4). Torque nut **30-40 INCH-POUNDS** and secure with cotter pin (3).

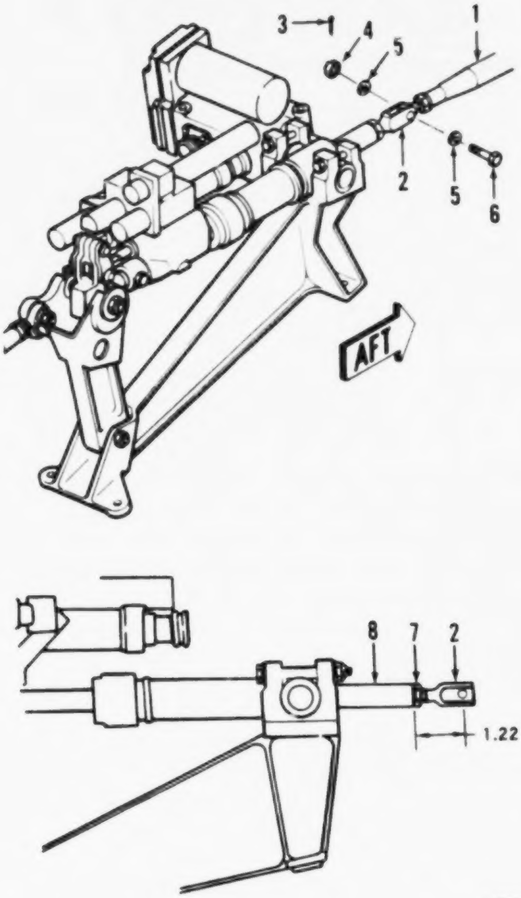
INSPECT

6. Close aft electrical compartment door and access panel.

FOLLOW-ON MAINTENANCE

Pilot perform MOC (TM55-1520-248-MTF).

END OF TASK



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7-9-8. CLEAN, INSPECT AND REPAIR CLEVIS ADAPTER

This task covers: Cleaning, Inspection and Repair (On/Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Materials:

Methyl-Ethyl-Ketone (D6)
Wiping Rags (D53)
Rubber Gloves (D119)
Sandpaper (D10)
Polyamide Epoxy Primer (D13)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer

CLEAN

WARNING

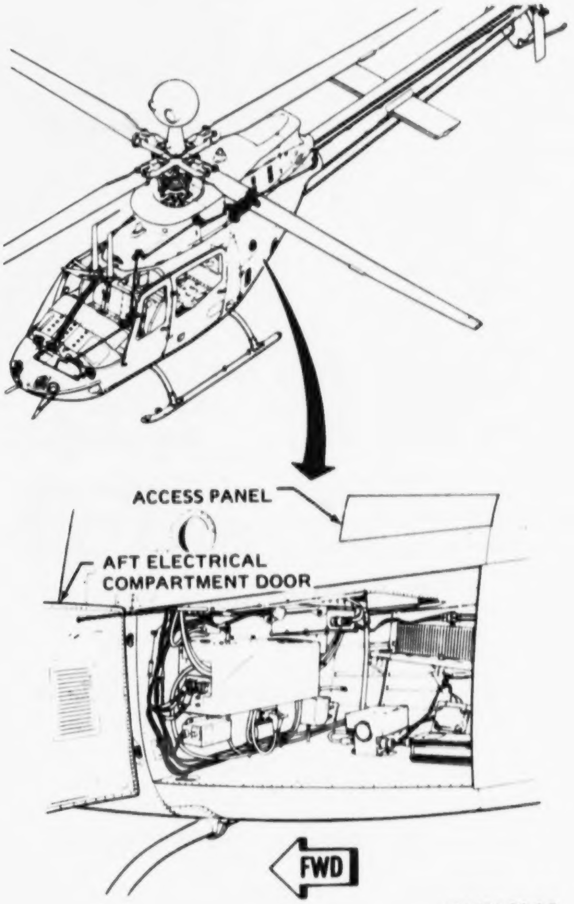
Methyl-Ethyl-Ketone (MEK) (D6) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean the threaded shank of clevis adapter with MEK (D6). Dry with wiping rag (D53).

INSPECT

2. Inspect clevis adapter to limits shown. Replace if limits are exceeded.

3. Inspect threaded shank for cracks using a minimum 10-power magnifying glass.



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7-9-8. CLEAN, INSPECT AND REPAIR CLEVIS ADAPTER (CONT)

4. Inspect clevis adapter ends for bending and note for elongation.

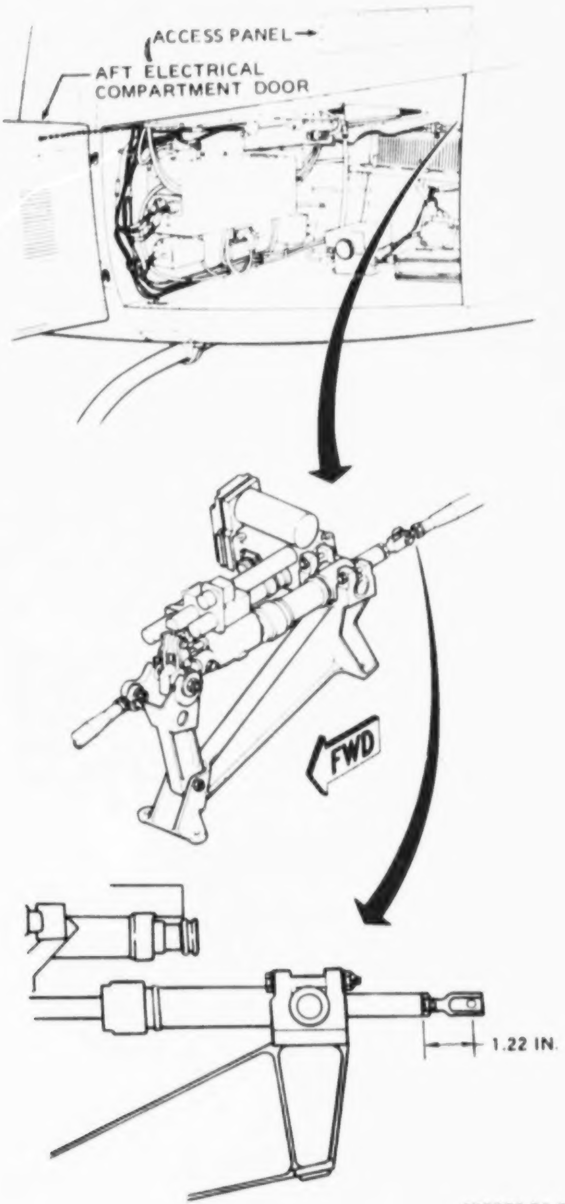
REPAIR

5. Remove all scratches within prescribed limitations with wet or dry sandpaper (D10) or finer to obtain a smooth, scratch-free surface.

6. Apply one coat of polyamide epoxy primer (D13) to repaired area.

7. Replace clevis adapter if holes are elongated more than 0.003 inch.

INSPECT


ACCESS PANEL
AFT ELECTRICAL COMPARTMENT DOOR
FWD
1.22 IN.

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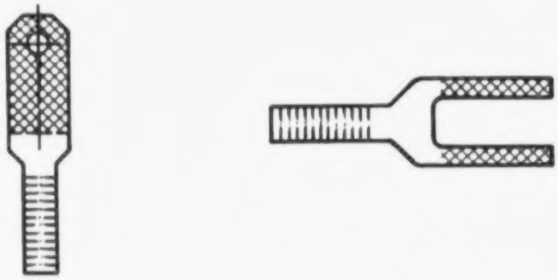
7-9-8. CLEAN, INSPECT AND REPAIR CLEVIS ADAPTER (CONT)



DAMAGE LOCATION SYMBOLS

TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH	
	▨	▭
MECHANICAL	0.005 In. before and after repair	0.010 In. before and after repair
CORROSION	0.0025 In. before and 0.005 in. after repair	0.005 in. before and 0.010 in. after repair
MAXIMUM AREA PER FULL DEPTH REPAIR	0.10 Sq. in.	1.00 Sq. in.
NUMBER OF REPAIRS	One per lug	Not critical
EDGE CHAMFER	0.020 In.	0.040 In.
BORES	0.002 In. for 1/4 circumference	
THREAD:		
Depth:	1/3 Of thread	
Length:	1/4 Inch	
Number:	Two per segment	

406076-60

END OF TASK

7-9-9. REMOVE/INSTALL COLLECTIVE HYDRAULIC ACTUATOR

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Suitable Container
Torque Wrench 30-150 Inch-Pounds

Parts:

Cotter Pin

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

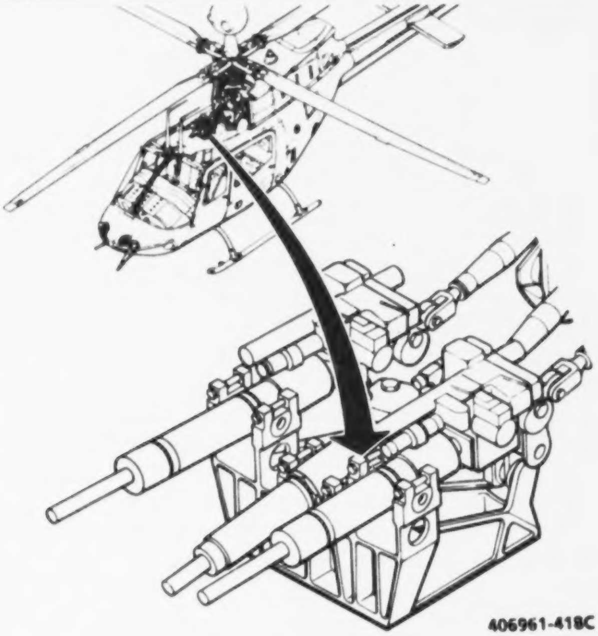
References:

TM 55-1520-248-MTF

General Safety Instructions:

WARNING

Ensure that no one operates controls from inside of helicopter during replacement of collective hydrualic actuator. Physical injury can occur. If injury occurs, seek medical aid.



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NOTE

If all actuators are to be removed, begin with cyclic actuators (Task 7-9-10).

REMOVE

1. Position maintenance platform on side of helicopter adjacent to transmission frontal area.

2. Place a suitable container under actuator (1) disconnect pressure line (2) and return line (3). Place protective caps on lines (2 and 3) and plugs in ports of actuator (1).

3. Disconnect tube assembly (4) from collective actuator (1) by removing cotter pin (5), nut (6), two washers (7) and bolt (8). Discard cotter pin (5).

4. Disconnect actuator (1) from support assembly (9) by removing two nuts (10), four washers (11), and two bolts (12). Rotate bushing (13) 90 degrees before removing.

5. Remove two bolts (14), four washers (15), two nuts (16), and two shims (17) securing two plate assemblies (18) to bellcrank assembly (19). Slide two plate assemblies (18) off trunnion of actuator (1) and remove actuator (1).

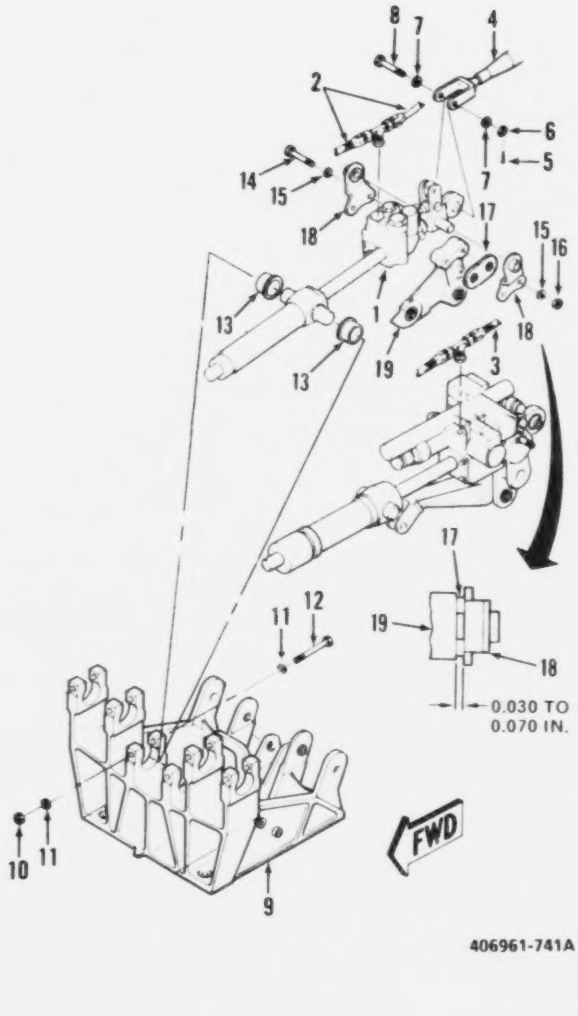
NOTE

If all actuators are to be installed, begin with collective actuators.

INSTALL

6. Install bushings (13) on actuator and rotate 90 degrees or until slot is parallel. Secure actuator (1) to support assembly (9) with two bolts (12) four washers (11), and two nuts (10).

7. Position two plate assemblies (18) on trunnion of actuator (1). Install plates on bellcrank assembly (19) with two bolts (14), four washers (15), two nuts (16), and two shims (17). Shim until a gap of 0.030-0.070 inch exists between each side of trunnion of actuator (1) and plate assemblies (18).



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NOTE

Check clearance at both ends of bellcrank travel.

CAUTION

Self-locking castellated nuts shall be safetied with cotter pin. Nonmetallic insert is not the primary safetying feature of these nuts. Test nuts by inserting matching bolt by hand. Reuse only those nuts that cannot be tightened down with fingers after locking action engages bolt.

8. Connect tube assembly (4) to actuator (1) with bolt (8), two washers (7), nut (6), and cotter pin (5).

9. Remove protective cap from pressure line (2) and plug from inlet port on actuator (1). Connect pressure line (2) to actuator (1).

10. Remove protective cap from return line (3) and plug from port of actuator (1). Connect return line (3) to actuator (1).

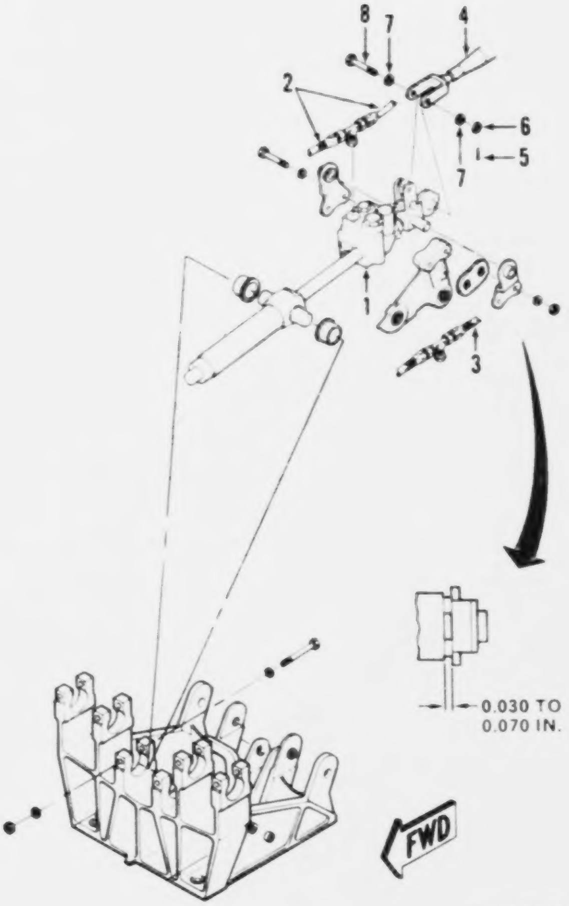
INSPECT

FOLLOW-ON MAINTENANCE

Bleed hydraulic system (Task 7-2-1).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC (TM 55-1520-248-MTF).



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END OF TASK

7-9-10. REMOVE/INSTALL CYCLIC HYDRAULIC ACTUATOR

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit
Maintenance Platform
Suitable Container
Torque Wrench 30-150 Inch-Pounds

Parts:

Cotter Pin

Materials:

Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68H Aircraft Pneudraulics Repairer
Pilot

Equipment Condition:

Forward Fairing Assembly Removed (Task 2-1-21)

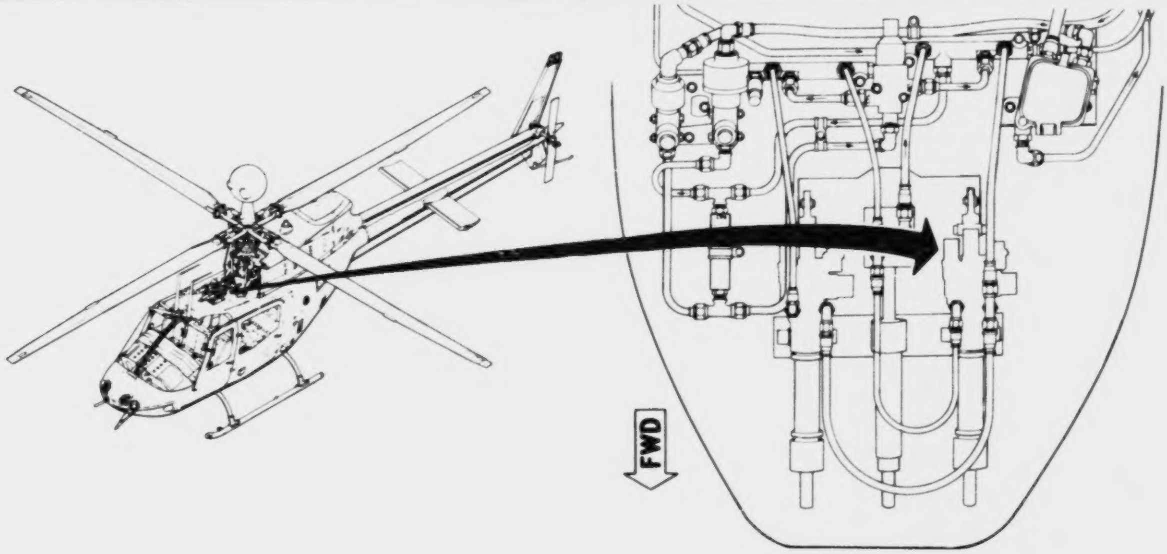
References:

TM 55-1520-248-MTF

General Safety Instructions:

WARNING

Do not operate cyclic controls during actuator removal. Physical injury could occur. If injury occurs, seek medical aid.



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7-9-10. REMOVE/INSTALL CYCLIC HYDRAULIC ACTUATOR (CONT)

REMOVE

1. Position maintenance platform on side of helicopter forward of transmission.

2. Disconnect electrical connectors (1) from SCAS unit.

3. Place container under actuator (2) and disconnect hose assemblies (3,4 and 5). Place protective caps on hoses (3,4 and 5) and plugs in ports of actuator (1).

4. Disconnect tube (6) from actuator (2) by removing cotter pin (7), nut (8), two washers (9), and bolt (10). Discard cotter pin (7).

5. Disconnect actuator (2) from support assembly (11) by removing two nuts (12), four washers (13), and two bolts (14). Rotate bushings (15) 90 degrees before removing.

NOTE

> Observe hardware stack-up on bellcrank in order to provide required gap between bellcrank and actuator on reassembly.

6. Disconnect actuator (2) from bellcrank (16) by removing cotter pin (17), nuts (18), washers (19), special washers (20), and washers (21).

7. Slide bearings (22) out of bellcrank (16) far enough to allow actuator to be removed from bellcrank.

8. Repeat steps (6 and 7) for opposite side of bellcrank (16).

9. Remove two bearings (22) and two spacers (23).

10. Remove actuator (2) from bellcrank and support assembly (11).

INSTALL

11. Install bushing (15) on actuator (2).

12. Install actuator (2) in support assembly (11).

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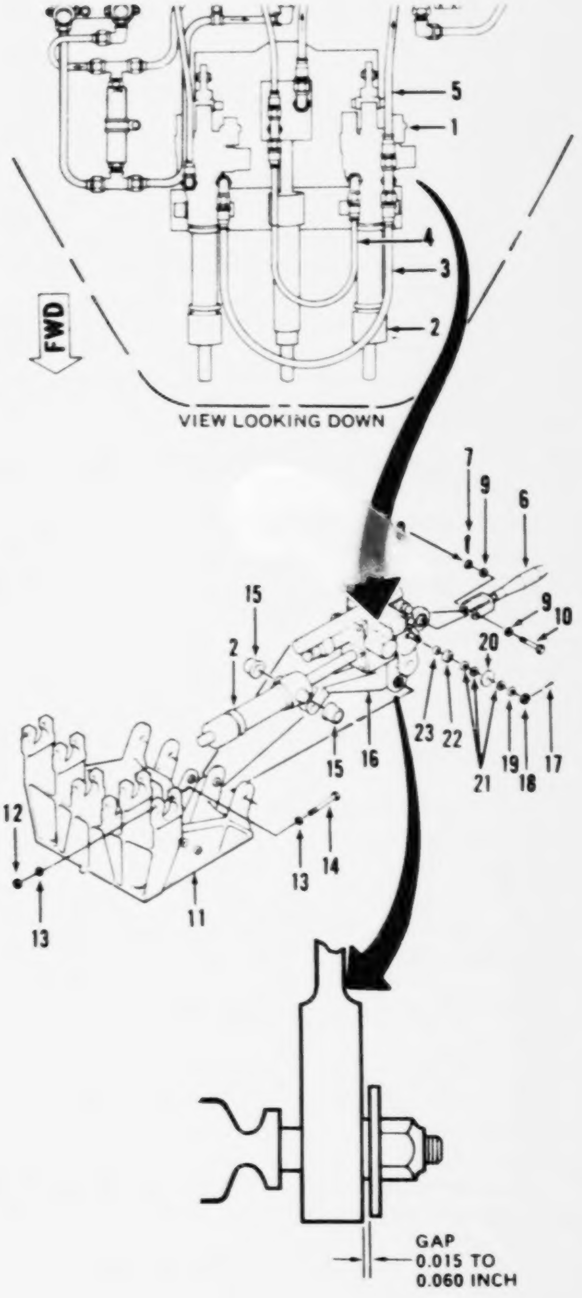

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7-9-10. REMOVE/INSTALL CYCLIC HYDRAULIC ACTUATOR (CONT)

13. Rotate bushings (15) to lock in support assembly (11).

14. Install two spacers (23) and two bearings (22) on actuator.

CAUTION

> Self-locking castellated nuts shall be safetied with cotter pin. Nonmetallic insert is not the primary safetying feature of the nuts. Test nuts by inserting a matching bolt by hand. Reuse only those nuts that cannot be tightened down with fingers after locking action engages bolt.

15. Slide bearing (22) into bore of bellcrank (16).

16. Position aluminum washers (21) as required on each side of bellcrank (16) to obtain 0.015 to 0.060 inch gap between bellcrank tang followed with special washer (20) with treated side facing bellcrank. Install washers (19) with nuts (18) and secure with cotter pins (17).

17. Secure actuator (2) to support (11) with bolts (14), washers (13) and nut (12).

18. Connect tube assembly (6) to actuator (2) with bolts (10), washers (9), nut (8) and secure with cotter pin (7).

19. Remove protective caps from hose (3 4 and 5) and plugs from ports in actuators (2).

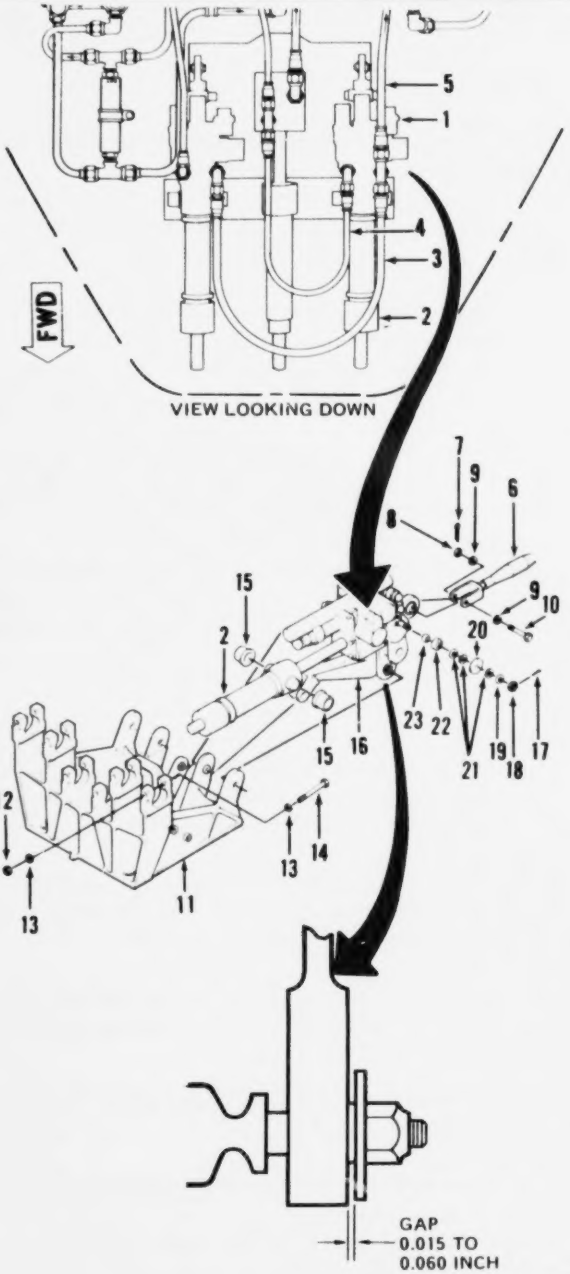
20. Connect electrical connectors (1) to SCAS unit.

21. Install hose assemblies (3,4 and 5) to actuators (2).

22. Remove container from under actuator (2) and discard old fluid.

23. Clean area with wiping rags (D53).

INSPECT



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FOLLOW-ON MAINTENANCE

Service hydraulic reservoir (Task 1-4-8).

Bleed hydraulic system (Task 7-2-1).

Install forward fairing assembly (Task 2-1-21).

Pilot perform MOC and MTF (TM 55-1520-248-MTF).

END OF TASK

CHAPTER 8

INSTRUMENT SYSTEMS

Section I Engine, Rotor, and Transmission Instruments 8-2
Section II Flight Instruments 8-37
Section III Pitot-Static Instrument and Air Data Systems 8-55
Section IV Navigation Instruments 8-87
Section V Miscellaneous Instruments 8-88

TROUBLESHOOTING INSTRUMENT SYSTEMS

When a particular symptom is found, reverify that the symptom is present before proceeding with the troubleshooting procedure and resulting repair action. This precludes unnecessary maintenance in the event an erroneous symptom occurred.

NOTE

Underlined letters on connectors will denote lower case letters.

Under certain circumstances, a fault may be exhibited during the operational check with the troubleshooting and repair logic for that fault in another task. Also, some logic trees refer to other tasks for continuation of troubleshooting. After location and subsequent repair of the fault, rerun the operational check in which the fault first appeared.

Troubleshooting procedures for the (MAPS) instrument systems are contained in Appendix K, Section III.

Section I. ENGINE, ROTOR, AND TRANSMISSION INSTRUMENTS

This section includes procedures for operational check, troubleshooting, inspection, cleaning, removal, installation, disassembly, assembly and follow-on maintenance of the engine, rotor, and transmission instruments.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Operational Check — Engine, Rotor, and Transmission Instruments	8-1-1	8-3
Clean and Inspect Engine, Rotor, and Transmission Instruments	8-1-2	8-7
Remove/Install Multiparameter Display BRT Control Knob	8-1-3	8-8
Remove/Install Multiparameter Display Fuse(s) (Typical)	8-1-4	8-9
Remove/Install Multiparameter Display (MPD)	8-1-5	8-10
Disassembly Multiparameter Display (MPD) (AVIM)	8-1-6	8-11
Clean, Inspect, and Repair Multiparameter Display (MPD) (AVIM)	8-1-7	8-12
Assemble Multiparameter Display (MPD) (AVIM)	8-1-8	8-16
Remove/Install TGT/TRQ Indicator	8-1-9	8-18
Disassemble/Assemble TGT/TRQ Indicator (AVIM)	8-1-10	8-19
Clean, Inspect, and Repair TGT/TRQ Indicator (AVIM)	8-1-11	8-22
Remove/Install Dual Tachometer	8-1-12	8-26
Disassemble/Assemble Dual Tachometer (AVIM)	8-1-13	8-27
Clean, Inspect, and Repair Dual Tachometer (AVIM)	8-1-14	8-29
Remove/Install Instrument Panel Glareshield	8-1-15	8-33
Clean, Inspect, and Repair Instrument Panel Glareshield	8-1-16	8-35

8-1-1. OPERATIONAL CHECK — ENGINE, ROTOR, AND TRANSMISSION INSTRUMENTS

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

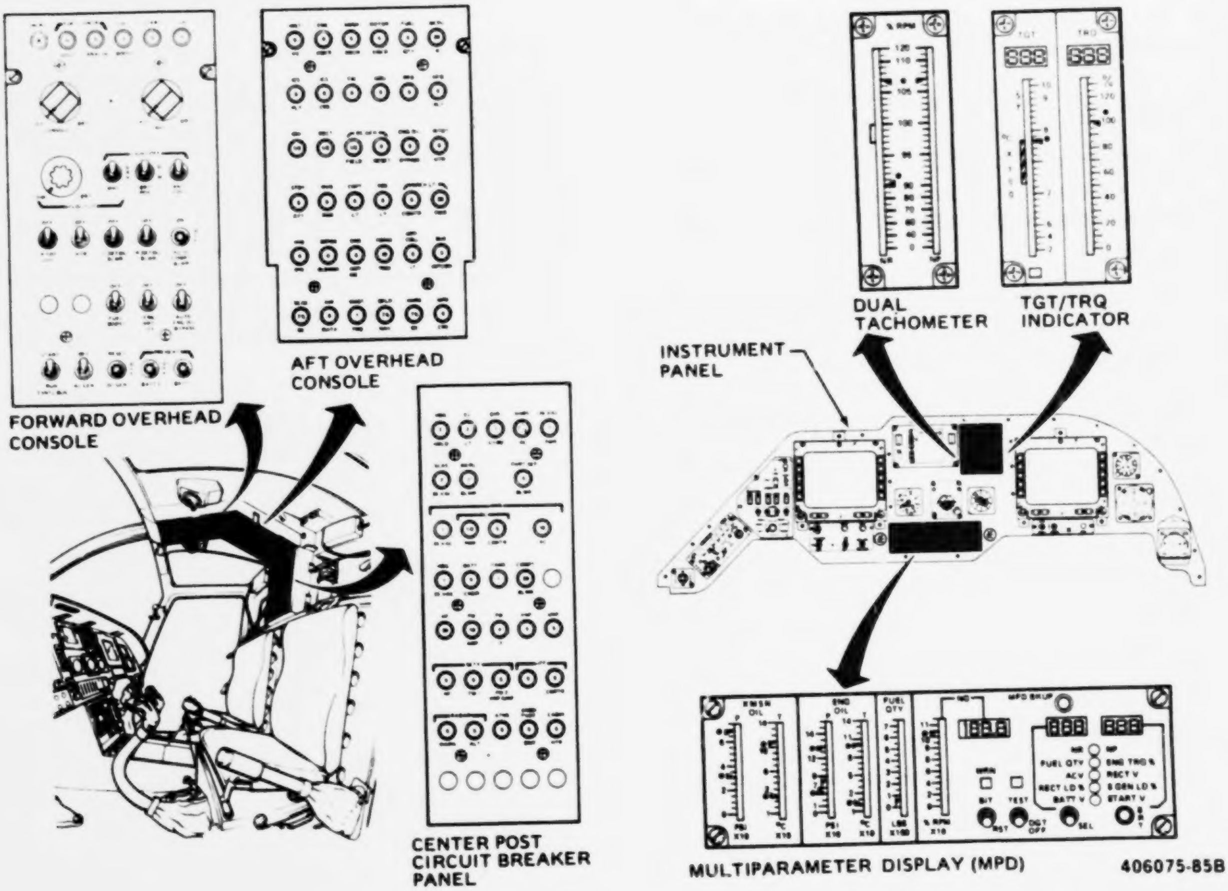
Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

All Switches — OFF
All Circuit Breakers Closed (Overhead Console/Center Post, Nose, and Aft Electrical Compartment)


FORWARD OVERHEAD CONSOLE
AFT OVERHEAD CONSOLE
CENTER POST CIRCUIT BREAKER PANEL
DUAL TACHOMETER
TGT/TRQ INDICATOR
INSTRUMENT PANEL
MULTIPARAMETER DISPLAY (MPD)
406075-85B

GO TO NEXT PAGE

8-1-1. OPERATIONAL CHECK — ENGINE, ROTOR, AND TRANSMISSION INSTRUMENTS (CONT)

NOTE

Acknowledge cautions and warnings before pressing menu or line address keys.

1. On overhead console panel (1) and center post circuit breaker panel (2) open the following circuit breakers:

   IGN (3)
   START (4)
   PART SEP BLWR (5)
   HF (6)

2. Apply 28 VDC external power (Task 9-3-10).

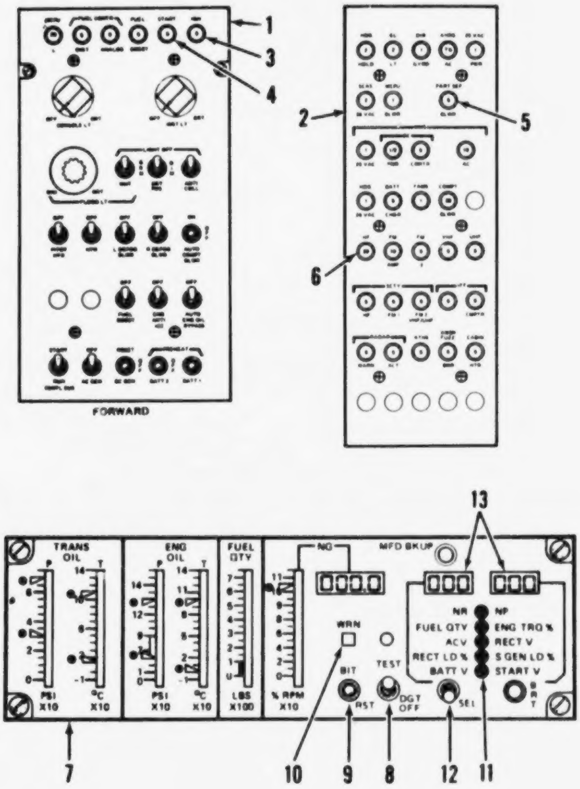
3. On MPD (7), set TEST/DGT OFF switch (8) to center position and BIT/RST switch (9) to center.

NOTE

Each time the SEL switch is pressed and released (up or down) a different mode is selected as indicated by appropriate mode light.

4. Verify that WRN light (10) is flashing and BAT V — START V mode lamp (11) is lit, or toggle SEL switch (12) until BATT V — START V is lit.

5. Verify that digital readout (13) indicates 28 ± 2 VDC.


1
3
4
2
5
6
FORWARD
13
TRANS OIL
ENG OIL
FUEL QTY
NG
MFD BKUP
WRN
BIT
RST
TEST
DGT OFF
SEL
NR
NP
FUEL QTY
ENG TRQ %
ACV
RECT V
RECT LD %
S GEN LD %
BATT V
START V
PSI X10
°C X10
LBS X100
% RPM X10
7
10
9
8
12
11

406075-409A

GO TO NEXT PAGE

8-1-1. OPERATIONAL CHECK — ENGINE, ROTOR, AND TRANSMISSION INSTRUMENTS (CONT)

6. Verify that the power indicators (14) are lit (bottom segment of vertical scale instruments).

7. Press and hold TEST/DGT OFF switch (8) to TEST and verify:

   a. All vertical scale indicator lights, on the MPD (7), dual tachometer (15), and TGT/TRQ indicator (16), are lit and driven to full scale deflection.

   b. All digital readouts (13) on MPD (7) and (17) on TGT/TRQ indicator (16) indicate all eights with the number one preceding the NG readout (18) on MPD (7).

   c. Release TEST/DGT OFF switch (8).

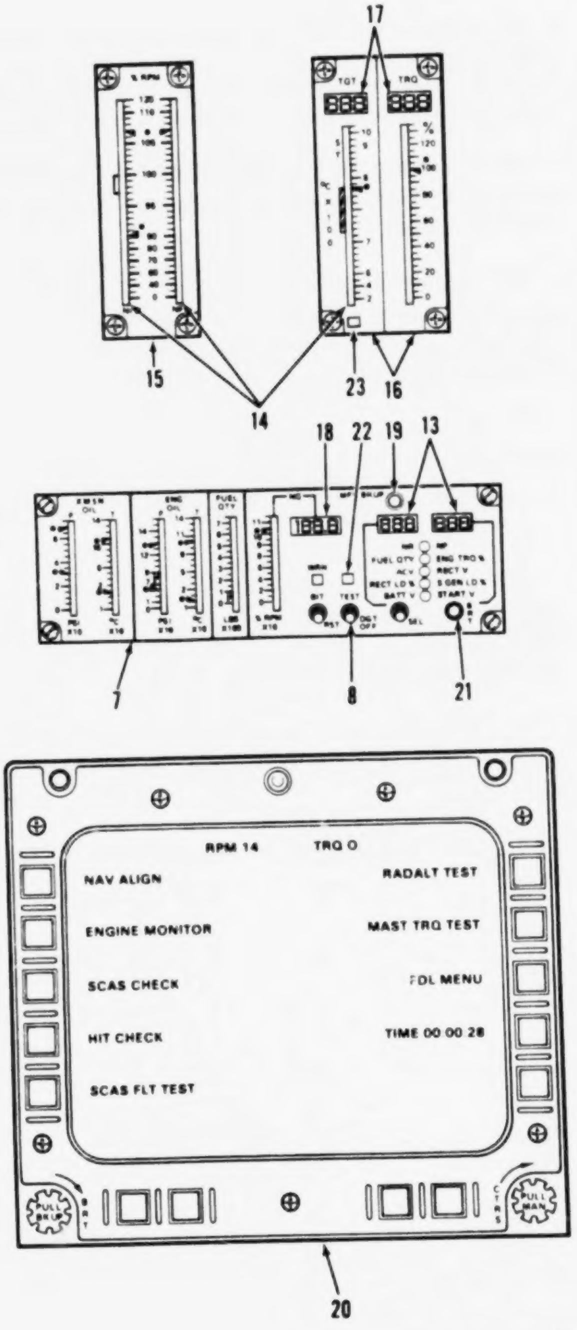
8. Press MFD BKUP switch (19) on the MPD (7) and verify that the RPM and TRQ indications are displayed on both multifunction displays (MFD) (20).

9. Turn BRT control (21) on MPD (7) halfway clockwise.

   a. Shine a flashlight on photo cell (22) on MPD (7) and verify that all indicator lights on the dual tachometer (15), TGT/TRQ indicator (16), and MPD (7) brighten.

   b. Shine a flashlight on photo cell (23) on TGT/TRQ indicator (16) and verify that all indicator lights on the dual tachometer (15), TGT/TRQ indicator (16) and MPD (7) brighten.

   c. Turn BRT control (21) on MPD (7) counter-clockwise to its prior setting or desired lighting level.


17
% RPM
TGT
TRQ
15
14
23
16
18
22
19
13
FUEL QTY
ACV
RECT LD %
BATT V
ENG TRQ %
RECT V
S GEN LD %
START V
BIT
TEST
7
8
21
RPM 14
TRQ 0
NAV ALIGN
RADALT TEST
ENGINE MONITOR
MAST TRQ TEST
SCAS CHECK
FDL MENU
HIT CHECK
TIME 00 00 28
SCAS FLT TEST
PULL BKUP
BRT
CTRS
PULL MAN
20

406075-410A

GO TO NEXT PAGE

8-1-1 OPERATIONAL CHECK — ENGINE, ROTOR, AND TRANSMISSION INSTRUMENTS (CONT)

10. On MPD (7) continue to press and release SEL switch (12) (up or down) until all modes (24) have been selected, and verify that each digital numeric display (13) changes with appropriate mode readout.

11. On MPD (7) set TEST/DGT OFF switch (8) to DGT OFF and verify that all numeric displays (13) and (18) are off.

12. Set BIT/RST switch (9) to BIT which will display the total number of errors in the numeric display (13) and WRN light (10) will stop flashing, but remain lit until all errors are corrected.

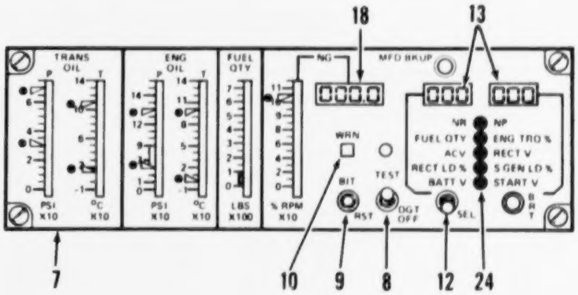
NOTE

With rotor not turning an error of F1 05 is normal.

13. Press and release SEL switch (12) down to display failure codes in numeric display (13) when more than one failure exists. Error codes are automatically cycled through.

14. Press and release BIT/RST switch (9) to RST (when all failures have cleared) to initialize all registers.

15. Turn off external dc electrical power (Task 9-3-11).


18
13
TRANS OIL
P
T
PSI X10
°C X10
ENG OIL
P
T
PSI X10
°C X10
FUEL QTY
LBS X100
NG
% RPM X10
MFD BKUP
WRN
BIT
RST
TEST
DGT OFF
NR
FUEL QTY
ACV
RECT LD %
BATT V
NP
ENG TRQ %
RECT V
S GEN LD %
START V
SEL
BRT
7
10
9
8
12
24

	CODE	FAULT
F1	01	HARD FAILURE, PROCESSOR
	02	SOFT FAILURE. PROCESSOR
	03	LEFT UART FAILURE
	04	RIGHT UART FAILURE
	05	ROTOR ERROR
	06	POWER FAILURE, MPD RCVR
	07	LOGIC FAILURE, MPD RCVR
	08	POWER FAILURE, MPD RCVR
	09	LOGIC FAILURE, MPD RCVR
	10	POWER FAILURE, MPD RCVR
	11	LOGIC FAILURE, MPD RCVR
	12	FUSE FAILURE, MPD
F2	01	POWER FAIL, TGT/TRQ RECEIVER
	02	TGT RECEIVER FAILURE
	03	TRQ RECEIVER FAILURE
	04	TGT/TRQ DISPLAY
	05	TGT/TRQ INDICATOR NOT CONNECTED
	06	TGT RCVR LOGIC FAILURE
	07	TRQ RCVR LOGIC FAILURE
F3	01	POWER FAIL, NR/NP
	02	RECEIVER FAIL, NR/NP
	03	NR/NP DISPLAY FAILURE
	04	NR/NP LOGIC FAILURE
	05	NR/NP INDICATOR NOT CONNECTED

406075-829

END OF TASK

8-1-2. CLEAN AND INSPECT ENGINE, ROTOR, AND TRANSMISSION INSTRUMENTS

This task covers: Cleaning and Inspection (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Materials:

Drycleaning Solvent (D1)
Lint-Free Cloth (D56)
Gloves, Rubber (D119)

Personnel Required:

67S Scout Helicopter Repairer

References:

TM 55-1520-248-10

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CLEAN

1. Clean face of indicators with drycleaning solvent (D1).

2. Dry face of indicators with a dry, lint-free cloth (D56).

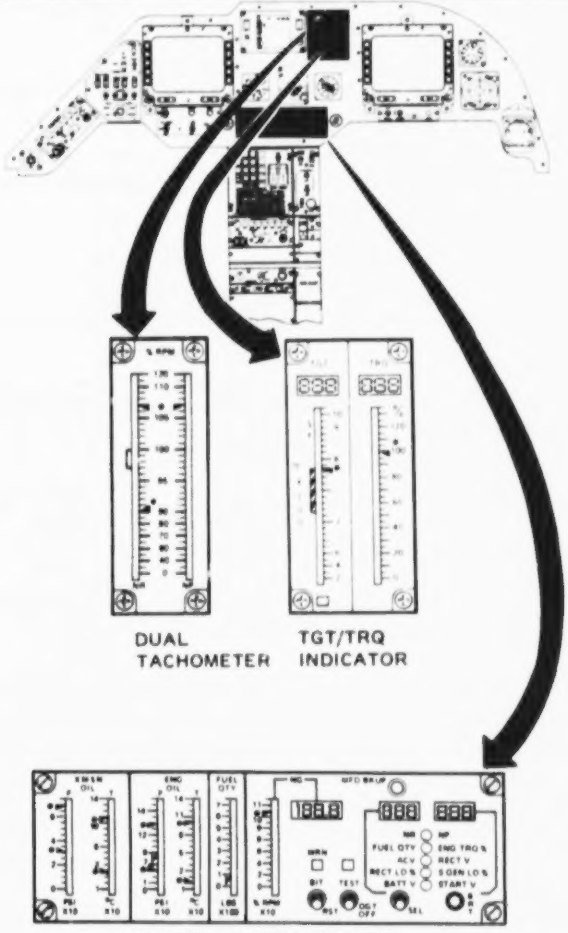
INSPECT

3. Inspect for loose, cracked, or broken switches and face covers.

4. Inspect for proper and secure mounting.

5. Inspect all markings and decals for completeness and legibility. (TM 55-1520-248-10).

END OF TASK



406075-81A

8-1-3. REMOVE/INSTALL MULTIPARAMETER DISPLAY BRT CONTROL KNOB

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

REMOVE

1. Gain access to multiparameter display (1) through either crew door.

2. Loosen two setscrews (2) holding BRT control knob (3) on brightness control shaft (4).

3. Slide BRT control knob (3) from control shaft (4).

INSTALL

4. Slide BRT control knob (3) onto the brightness control shaft (4).

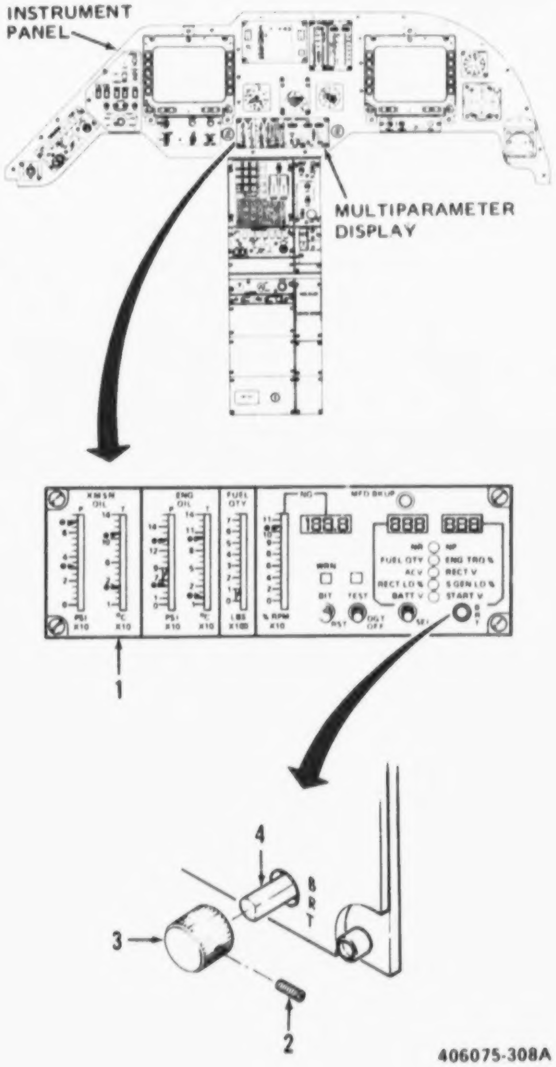
5. Tighten two setscrews (2) in BRT control knob (3) until knob is secure.

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-1-1) and verify that digital display indicates 888 (left and right).

Check BRT control knob by turning and ensuring brightness varies.



END OF TASK

8-1-4 REMOVE/INSTALL MULTIPARAMETER DISPLAY FUSE(S) (TYPICAL)

This task covers: Removal and Installation (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
Multimeter AN/USM-223

Parts:

Fuse(s)

Personnel Required:

68F Aircraft Electrician

REMOVE

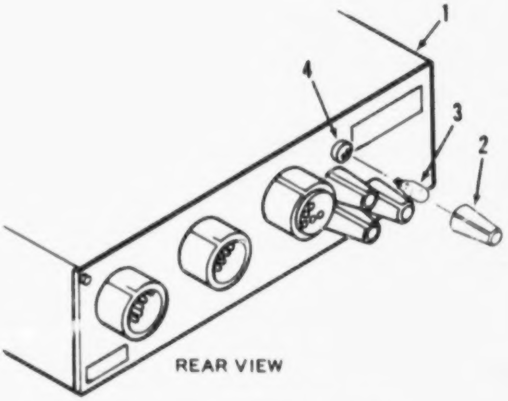
1. At the rear of multiparameter display (1), remove fuse holder(s) (2) and fuse(s) (3).

2. Using multimeter, check for continuity of fuse.

INSTALL

3. Insert fuse(s) (3) into appropriate socket (4) of multiparameter display (1).

4. Place fuse holder(s) (2) over fuse(s) and turn clockwise.



MULTIPARAMETER DISPLAY (MPD)

406075-309A

END OF TASK

8-1-5. REMOVE/INSTALL MULTIPARAMETER DISPLAY (MPD)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

References:

TM 9-1427-779-20

Equipment Condition:

Keyboard Removed (TM 9-1427-779-20)

REMOVE

1. Gain access to instrument panel and pedestal console through either crew door.

2. Loosen four dzus fasteners (1) in front panel of MPD (2).

3. Disconnect three electrical connectors (3) at the rear of MPD (2).

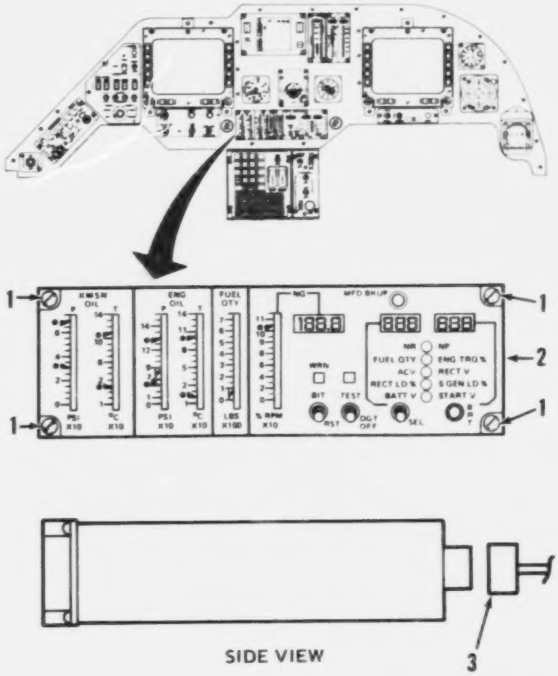
4. Remove MPD (2) from its mount.

INSTALL

5. Place serviceable MPD (2) in its mount.

6. Identify and connect three electrical connectors (3) to MPD.

7. Tighten four dzus fasteners (1) in front of MPD.


1
1
1
1
2
KMSN OIL
P
T
PSI X10
°C X10
ENG OIL
P
T
PSI X10
°C X10
FUEL QTY
LBS X100
% RPM X10
NG
MFD BKUP
188.8
888
888
NR
NP
FUEL QTY
ENG TRQ %
ACV
RECT V
RECT LD %
S GEN LD %
BATT V
START V
WRN
BIT
TEST
RST
OGT OFF
SEL
SIDE VIEW
3

406075-79B

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-1-1).

Install keyboard (TM 9-1427-779-20).

END OF TASK

8-1-6. DISASSEMBLY MULTIPARAMETER DISPLAY (MPD) (AVIM)

This task covers: Disassembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

NOTE

> Disassembly of the MPD shall be accomplished only to the extent necessary to clean, inspect, or repair by replacing inoperative assembly, subassembly, etc., indicated by the maintenance form failure code(s). Failure codes are depicted in Task 8-1-7.

1. Remove front panel (1) by loosening two setscrews (2) and removing BRT control knob (3), six short screws (4), and two long screws (5).

NOTE

> Steps 2. through 8. may be accomplished out of sequence or may be disregarded when not required by the maintenance action.

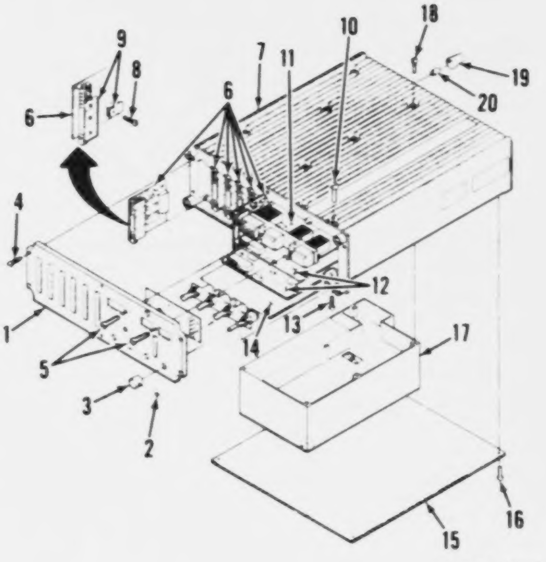
2. Pull six analog driver cards (6) from case assembly (7).

3. Remove four screws (8) and disconnect four lamp boards (9) from each (six) analog driver card (6).

4. Remove two screws (10) and pull digital driver card (11) from case assembly (7).

5. Pull two receiver cards (12) from case assembly (7).

6. Remove three screws (13) and pull processor card (14) from case assembly (7).



406075-311C

7. Remove bottom cover (15) by removing ten screws (16). Loosen two captive screws and disengage connector from underside of power supply (17). Then remove six screws (18), and remove power supply (17) from case assembly (7).

8. Unscrew four fuse holders (19) and remove four fuses (20).

END OF TASK

8-1-7. CLEAN, INSPECT, AND REPAIR MULTIPARAMETER DISPLAY (MPD) (AVIM)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
Air Compressor (25 PSI or Less)
Goggles, Industrial
Brush, Paint
Brush (Nonmetallic)

Materials:

Line-free Cloth (D56)
Gloves, Rubber (D119)
Soap (2 oz./gal.) (D23)
Paint, Black (D92)
Isopropyl Alcohol (D150)
Stencil Marking Ink (D174)

Personnel Required:

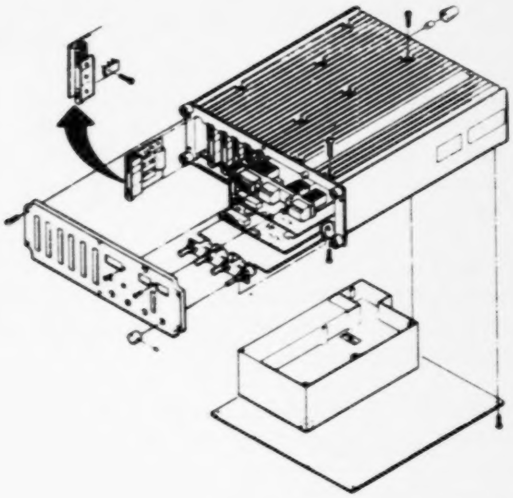
66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1500-204-25/1

GO TO NEXT PAGE

8-1-7. CLEAN, INSPECT, AND REPAIR MULTIPARAMETER DISPLAY (MPD) (AVIM) (CONT)



406075-497

CLEAN

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.

- Use goggles to protect eyes and face.
- Do not exceed 25 psig.
- Do not direct airstream toward yourself or another person.

If injury occurs, seek medical aid.

CAUTION

Compressed air (25 PSI maximum) at the nozzle shall be held no closer than six inches to item being cleaned. Failure to comply with this requirement may result in damage to MPD.

1. Remove dust, dirt, and other foreign matter from components, wiring, and surface areas of subassemblies, assemblies, etc., using brush (nonmetallic) and clean, dry, compressed air.

2. Remove ground-in and caked-on dirt from components, subassemblies, and assemblies, using soap (D23) mixed with water (mix 2 ounces of soap (D23) per gallon of water) with a soft nonmetallic brush.

WARNING

Isopropyl alcohol (D150) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated areas, away from heat or open flames. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

GO TO NEXT PAGE

8-1-7. CLEAN, INSPECT, AND REPAIR MULTIPARAMETER DISPLAY (MPD) (AVIM) (CONT)

CAUTION

Alcohol must NOT be used to clean front panel or resistors with color-code value bands. Failure to comply with this requirement may cause markings and codes to be obliterated.

3. Remove grease and film from components, subassemblies, and assemblies, using lint-free cloth (D56) moistened with isopropyl alcohol (D150). (TM 55-1500-204-25/1).

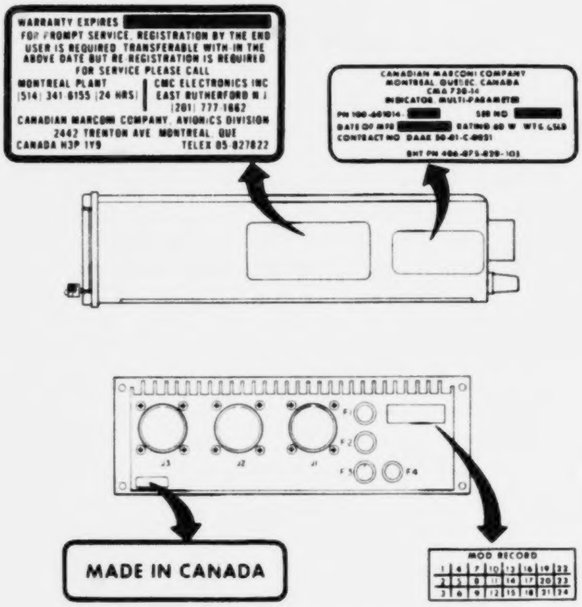
4. Dry all components, subassemblies, and assemblies with clean, dry compressed air, after cleaning with soap and water solution (mix 2 ounces of soap (D23) per gallon of water) or isopropyl alcohol (D150).

INSPECT

5. Check that stenciled markings (reference designators) on the rear of case assembly are properly located and legible.

6. Check electrical connectors on rear of case assembly for bent or broken pins, bent shells and broken or missing hardware.

7. Check assemblies and subassemblies for loose or missing hardware, for signs of discoloration and blistering that would indicate overheating or arcing; for broken wiring and component leads, and for scratches, dents, and broken components.


WARRANTY EXPIRES [redacted]
FOR PROMPT SERVICE, REGISTRATION BY THE END USER IS REQUIRED. TRANSFERABLE WITH-IN THE ABOVE DATE BUT RE-REGISTRATION IS REQUIRED.
FOR SERVICE PLEASE CALL
MONTREAL PLANT (514) 341-6155 (24 HRS)
CMC ELECTRONICS INC EAST RUTHERFORD N.J. (201) 777-1662
CANADIAN MARCONI COMPANY, AVIONICS DIVISION
2442 TRENTON AVE. MONTREAL, QUE
CANADA H3P 1Y9
TELEX 05-827822
CANADIAN MARCONI COMPANY
MONTREAL, QUEBEC, CANADA
CMA 730-14
INDICATOR, MULTI-PARAMETER
PN 100-601014- [redacted]
SER NO [redacted]
DATE OF MFG [redacted]
RATING 60 W
CONTRACT NO
J3
J2
J1
F1
F2
F3
F4
MADE IN CANADA
MOD RECORD
1 4 7 10 13 16 19 22
2 5 8 11 14 17 20 23
3 6 9 12 15 18 21 24

MULTIPARAMETER DISPLAY (MPD)

406075-313

GO TO NEXT PAGE

8-1-7. CLEAN, INSPECT, AND REPAIR MULTIPARAMETER DISPLAY (MPD) (AVIM) (CONT)

REPAIR

8. Repair painted surfaces using black lusterless enamel (D92) to touch-up scratches and scraped areas.

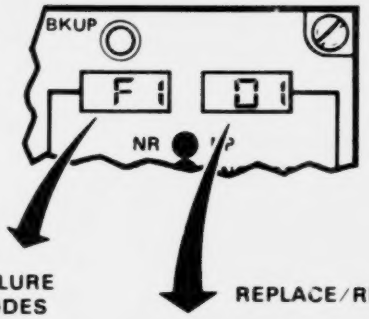
9. Repair reference designator markings, using white stencil ink (D174) to make letters and numerals 0.09 inch high.

10. Repair of all other components, assemblies, subassemblies, and attaching hardware is accomplished by replacement per failure code(s) on equipment tag.

NOTE

Failure codes entered on equipment tag are from display on MPD indicator.

INSPECT



FAILURE CODES		REPLACE/REPAIR
F1	01	PROCESSOR
F1	02	PROCESSOR
F1	03	PROCESSOR
F1	04	PROCESSOR
F1	05	PROCESSOR
F1	06	RECEIVER (LOWER)
F1	07	RECEIVER (LOWER)
F1	08	RECEIVER (UPPER)
F1	09	RECEIVER (UPPER)
F1	10	DIGIT DRIVER
F1	11	DIGIT DRIVER
F1	12	FUSE(S) REAR (4)*
—	—	ANALOG DRIVER (6)*
—	—	FRONT PANEL*
—	—	CASE ASSEMBLY*

*AS REQUIRED

406075-312

END OF TASK

8-1-8. ASSEMBLE MULTIPARAMETER DISPLAY (MPD) (AVIM)

This task covers: Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Quick Primer (D147)
Sealing, Locking and Retaining Compound (D148)

Personnel Required:

68F Aircraft Electrician

NOTE

Steps 1 through 6 may be performed out of sequence, or disregarded if units were not removed.

1. Install four fuses (1) and twist four fuse holders (2) into place at the rear of case assembly (3).

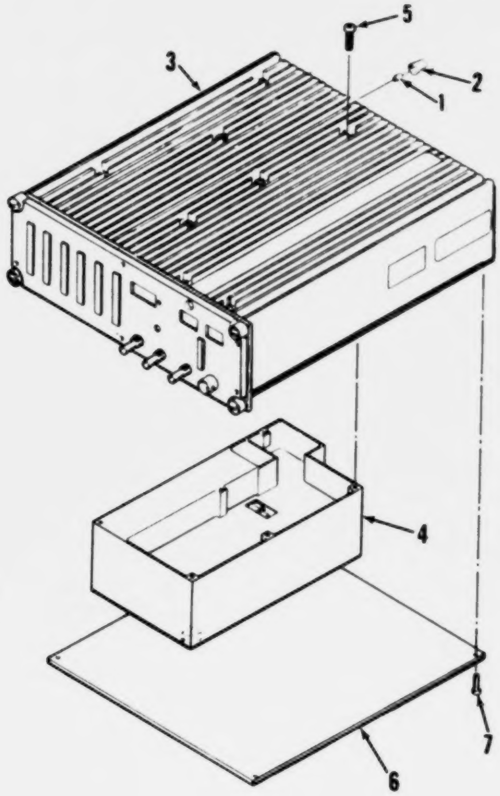
CAUTION

All screws must be lock-sealed during assembly. Failure to comply with this requirement may result in failure of instruments and possible electrical hazards.

NOTE

Lock-sealing of screws requires soaking screws in quick primer (D147) for at least one hour and then dipping in sealing compound (D148) at time of installation.

2. Install power supply (4) in bottom of case assembly (3) with six screws (5). Connect electrical connector on underside of power supply (4). Then install bottom cover (6), using ten screws (7).



406075-498

GO TO NEXT PAGE

8-1-8. ASSEMBLE MULTIPARAMETER DISPLAY (MPD) (AVIM) (CONT)

NOTE

Motherboard and motherboard connectors are located within MPD case assembly. Motherboard interconnects various assemblies of MPD.

3. Install processor card (8), press into its motherboard connector, and secure with three screws (9) in case assembly (3).

4. Install two receiver cards (10) and press each receiver card into its motherboard connector.

5. Install digital driver card (11), press driver card into its motherboard connector, and secure with two screws (12).

NOTE

The upper end of analog scale utilizes two three-lamp boards and the lower end utilizes two five-lamp boards.

CAUTION

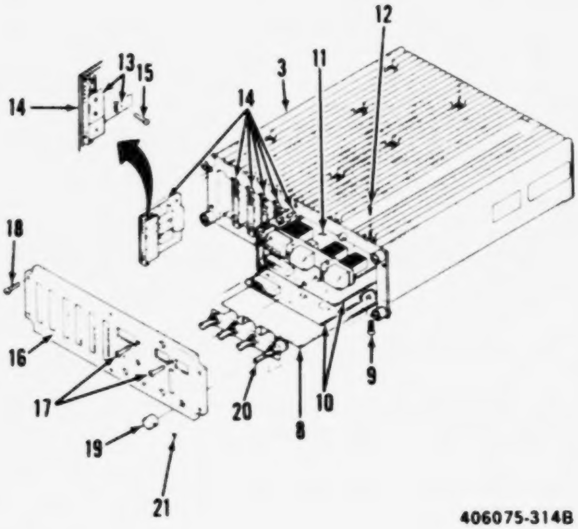
All screws must be lock-sealed during assembly. Failure to comply with this requirement may result in failure of instruments and possible electrical hazards.

NOTE

Lock-sealing of screws requires soaking of screws in quick primer (D147) for at least one hour and then dipping in sealing compound (D148) at time of installation.

6. Connect four lamp boards (13) into each of the six analog driver cards (14) and install four screws (15); then, install the six cards pressing each into its motherboard connector in case assembly.

7. Align front panel (16) with its mounting holes in case assembly (3) and install two long screws (17) and six short screws (18).



406075-314B

8. Slide BRT control knob (19) onto its shaft (20) and tighten two locking setscrews (21).

INSPECT

END OF TASK

8-1-9. REMOVE/INSTALL TGT/TRQ INDICATOR

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

REMOVE

1. Gain access to instrument panel through either crew door.

2. Remove four screws (1) from indicator (2).

3. Pull indicator (2) out of instrument panel (3) as far as electrical cable allows.

4. Disconnect electrical connector (4).

5. Remove one nut (5) and one washer (6). Disconnect bonding strip (7) from stud on indicator.

6. Remove indicator (2).

INSTALL

7. Connect electrical connector (4) to TGT/TRQ indicator (2).

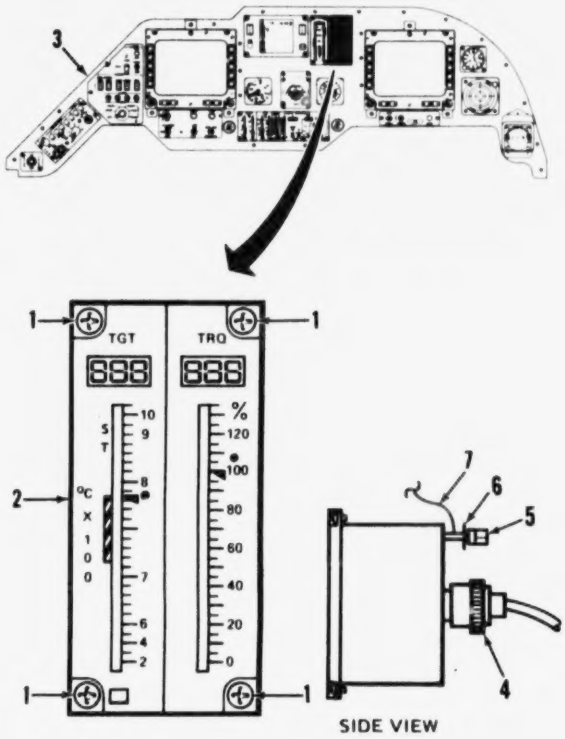
8. Connect bonding strip (7) to stud on indicator. Install one washer (6) and one nut (5).

9. Place indicator (2) in its mount, align mounting holes.

10. Install four screws (1).

FOLLOW-ON MAINTENANCE

Perform operational check. (Task 8-1-1).



406075-75B

END OF TASK

8-1-10. DISASSEMBLE/ASSEMBLE TGT/TRQ INDICATOR (AVIM)

This task covers: Disassembly and Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Quick Primer (D147)
Retaining Compound (D148)

Personnel Required:

68F Aircraft Electrician

GO TO NEXT PAGE

8-1-10. DISASSEMBLE/ASSEMBLE TGT/TRQ INDICATOR (AVIM) (CONT)

DISASSEMBLE

NOTE

Disassembly shall be accomplished only to the extent necessary to clean, inspect, and repair by replacing inoperative assembly, subassembly, etc., indicated by the attached maintenance form failure code(s). Failure codes are depicted in Task 8-1-11.

1. Remove front panel (1) by removing four bushings (2) and screw (3).

NOTE

Steps 2. through 4. may be accomplished out of sequence or may be disregarded when not required by the maintenance action.

2. Pull two receiver cards (4) from case assembly (5). Remove six screws (6) and unplug six lamp boards (7).

3. Pull two lamp driver cards (8) from case assembly (5).

4. Pull digital driver card (9) from case assembly (5).

ASSEMBLE

NOTE

Steps 5. through 7. may be accomplished out of sequence or may be disregarded when not required by maintenance action.

Motherboard and motherboard connectors are located within case assembly. Motherboard interconnects TGT/TRQ indicator and various assemblies of MPD.

5. Install digital driver card (9) and press into its motherboard connector in case assembly (5).

6. Install two lamp driver cards (8) and press into their motherboard connectors in case assembly (5).

NOTE

The upper end of analog scale utilizies two five-lamp boards followed by one three-lamp board then three five-lamp boards.

CAUTION

All screws must be lock-sealed during assembly. Failure to comply with this requirement may result in failure of flight instruments and possible electrical hazards.

NOTE

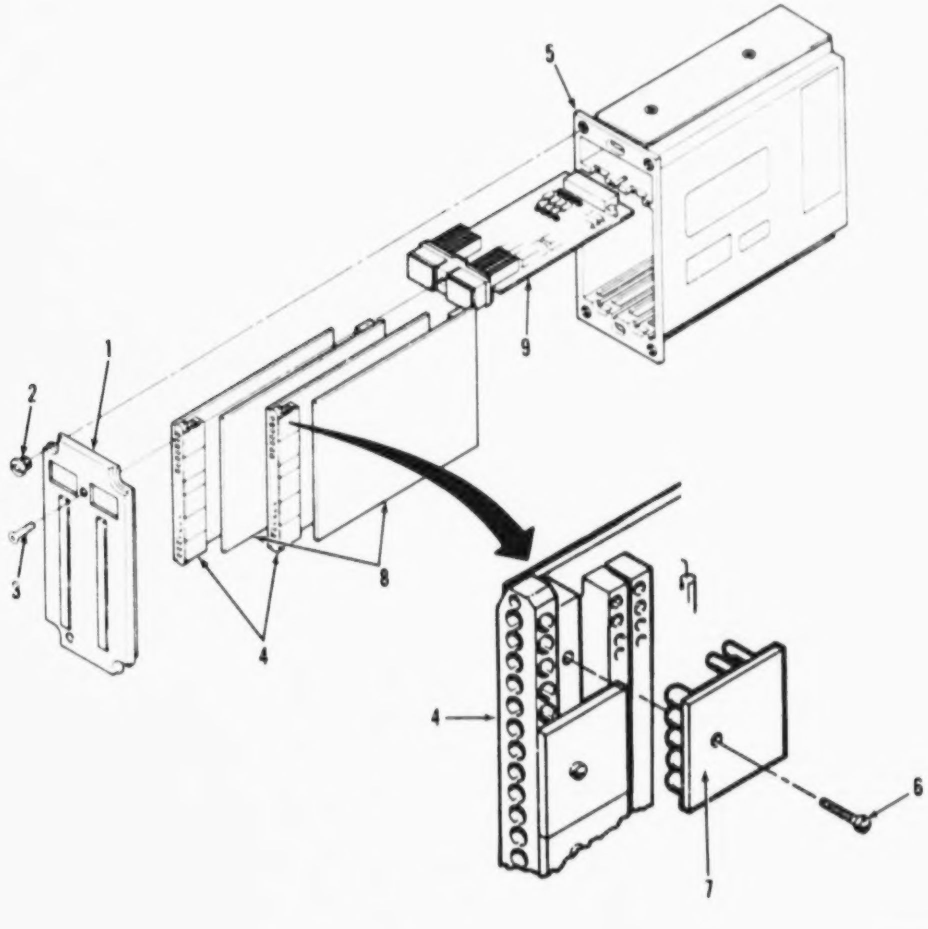
Lock-sealing of screws requires soaking of screws in quick primer (D147) for at least one hour and then dipping in sealing compound (D148) at time of installation.

7. Connect six lamp boards (7) into each of the two receiver cards (4) and install six screws (6); then install the two cards (4), pressing each into its motherboard connector in case assembly (5).

8. Place front panel (1) in its mounting position and install screw (3) and four bushings (2).

GO TO NEXT PAGE

8-1-10. DISASSEMBLE/ASSEMBLE TGT/TRQ INDICATOR (AVIM) (CONT)


5
9
1
2
3
4
8
4
6
7

406075-316A

END OF TASK

8-1-11. CLEAN, INSPECT, AND REPAIR TGT/TRQ INDICATOR (AVIM)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
Air Compressor (25 PSI or Less)
Goggles, Industrial
Brush, Paint
Nonmetallic Brush

Materials:

Lint-free Cloth (D56)
Gloves, Rubber (D119)
Soap (2 oz./gal.) (D23)
Paint, Black (D92)
Isopropyl Alcohol (D150)
Stencil Marking Ink (D174)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1500-204-25/1

CLEAN

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.

- Use goggles to protect eyes and face.
- Do not exceed 25 psig.
- Do not direct airstream toward yourself or another person.

If injury occurs, seek medical aid.

CAUTION

Compressed air (25 PSI maximum) at the nozzle shall be held no closer than six inches to item being cleaned. Failure to comply with this requirement may result in damage to TGT/TRQ indicator.

GO TO NEXT PAGE

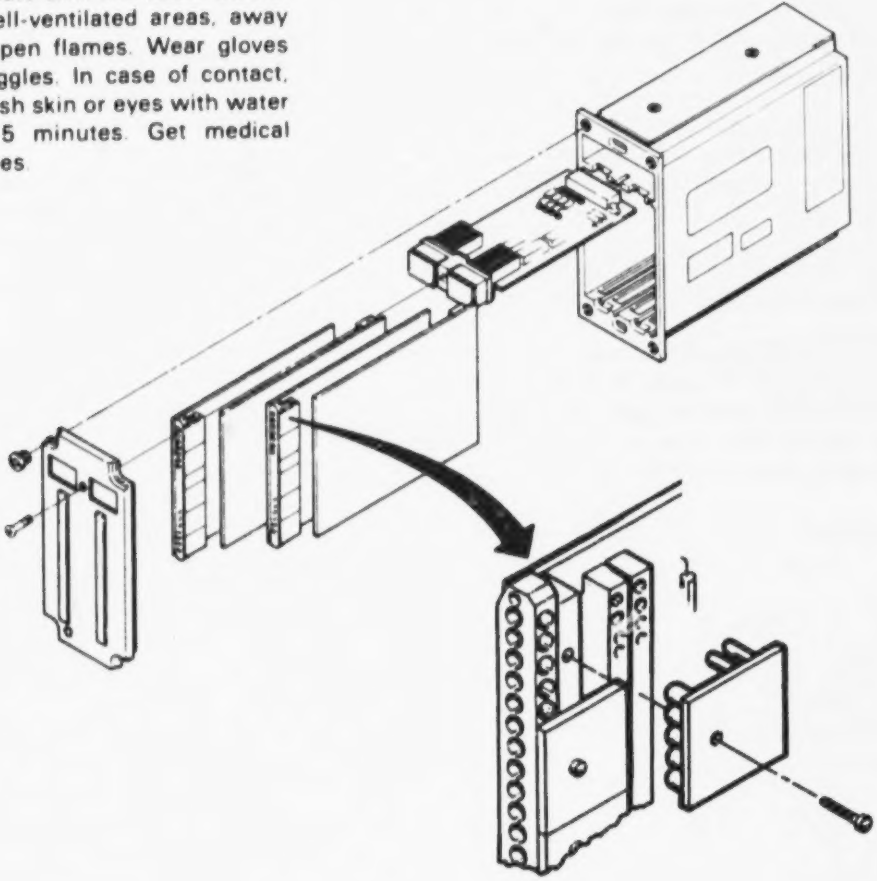
8-1-11. CLEAN, INSPECT, AND REPAIR TGT/TRQ INDICATOR (AVIM) (CONT)

1. Remove dust, dirt, and other foreign matter from components, wiring, and surface areas of subassemblies, assemblies, etc., using brush (nonmetallic) and clean, dry, compressed air.

2. Remove ground-in and caked-on dirt from components, subassemblies, and assemblies using soap (D23) mixed with water (mix 2 ounces of soap (D23) per gallon of water) with a soft nonmetallic brush.

WARNING

Isopropyl alcohol (D150) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated areas, away from heat or open flames. Wear gloves (D119) and goggles. In case of contact, immediatley flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



406075-392

GO TO NEXT PAGE

8-1-11. CLEAN, INSPECT, AND REPAIR TGT/TRQ INDICATOR (AVIM) (CONT)

CAUTION

> Alcohol must NOT be used to clean front panel or resistors with color-code value bands. Failure to comply with this requirements may cause markings and codes to be obliterated.

3. Remove grease and film from components, subassemblies, and assemblies using lint-free cloth (D56) moistened with isopropyl alcohol (D150). (TM 55-1500-204-25/1).

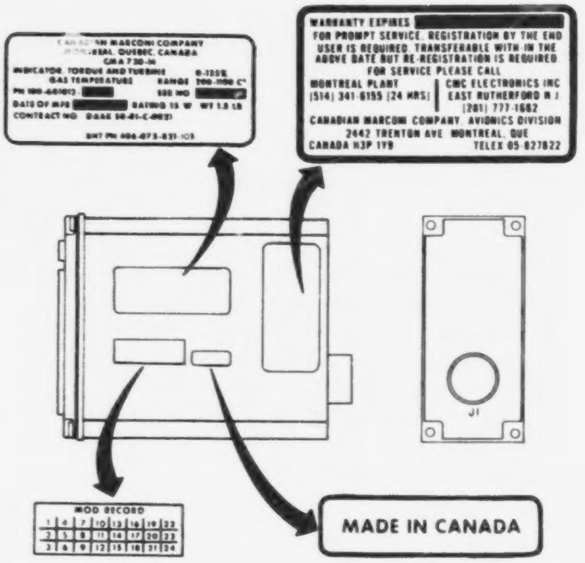
4. Dry all components, subassemblies, assemblies with clean, dry, compressed air after cleaning with soap and water solution (mix 2 ounces of soap (D23) per gallon of water) or isopropyl alcohol (D150).

INSPECT

5. Check that stenciled marking (reference designator) on the rear of case assembly is properly located and legible.

6. Check electrical connector for bent or broken pins, bent shells, and broken or missing hardware.

7. Check assemblies and subassemblies for loose or missing hardware, for signs of discoloration and blistering that would indicate overheating or arcing, for broken wiring and component leads, and for scratches, dents, and broken components.


CANADIAN MARCONI COMPANY
MONTREAL, QUEBEC, CANADA
CMA 730-16
INDICATOR, TORQUE AND TURBINE GAS TEMPERATURE
RANGE 0-125% 200-1100 C°
PN 100-601012-
SER NO
DATE OF MFG
RATING 15 W
WT 1.5 LB
CONTRACT NO DAAE 10-81-C-0021
BHT PN 406-075-031-103
WARRANTY EXPIRES
FOR PROMPT SERVICE, REGISTRATION BY THE END USER IS REQUIRED. TRANSFERABLE WITH-IN THE ABOVE DATE BUT RE-REGISTRATION IS REQUIRED
FOR SERVICE PLEASE CALL
MONTREAL PLANT (514) 341-6155 (24 HRS)
CMC ELECTRONICS INC EAST RUTHERFORD N J (201) 777-1662
CANADIAN MARCONI COMPANY, AVIONICS DIVISION
2442 TRENTON AVE MONTREAL, QUE
CANADA H3P 1Y9
TELEX 05-827822
J1
MOD RECORD
1 4 7 10 13 16 19 22
2 5 8 11 14 17 20 23
3 6 9 12 15 18 21 24
MADE IN CANADA

TGT/TRQ INDICATOR

406075-317

GO TO NEXT PAGE

8-1-11. CLEAN, INSPECT, AND REPAIR TGT/TRQ INDICATOR (AVIM) (CONT)

REPAIR

8. Repair painted surfaces using black lusterless enamel (D92) to touch-up scratches and scraped areas.

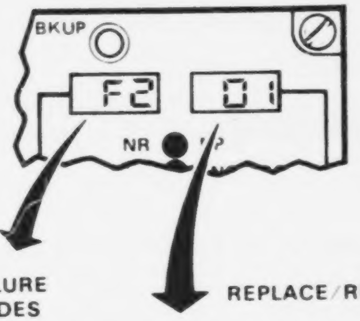
9. Repair reference designator marking using white stencil ink (D174) to make letter and numeral 0.09 inch high.

10. Repair of all other components, subassemblies, assemblies, and attaching hardware is accomplished by replacement per failure code(s) on equipment tag.

NOTE

Failure codes entered on equipment tag are from display on MPD indicator.

INSPECT



FAILURE CODES		REPLACE/REPAIR
F2	01	RECEIVERS TGT/TRQ
F2	02	RECEIVER TGT
F2	03	RECEIVER TRQ
F2	04	DIGIT DRIVER AND BOTH LAMP DRIVERS
F2	05	INDICATOR NOT CONNECTED
F2	06	RECEIVER (LEFT)
F2	07	RECEIVER (RIGHT)
—	—	FRONT PANEL*
—	—	CASE ASSEMBLY*

*AS REQUIRED

406075-318

END OF TASK

8-1-12. REMOVE/INSTALL DUAL TACHOMETER

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

REMOVE

1. Gain access to instrument panel through either crew door.

2. Remove four screws (1) from dual tachometer (2).

3. Pull dual tachometer (2) from instrument panel (3) as far as cable allows.

4. Disconnect electrical connector (4).

5. Remove one nut (5) and one washer (6). Disconnect bonding strip (7) from stud on indicator.

6. Remove dual tachometer (2).

INSTALL

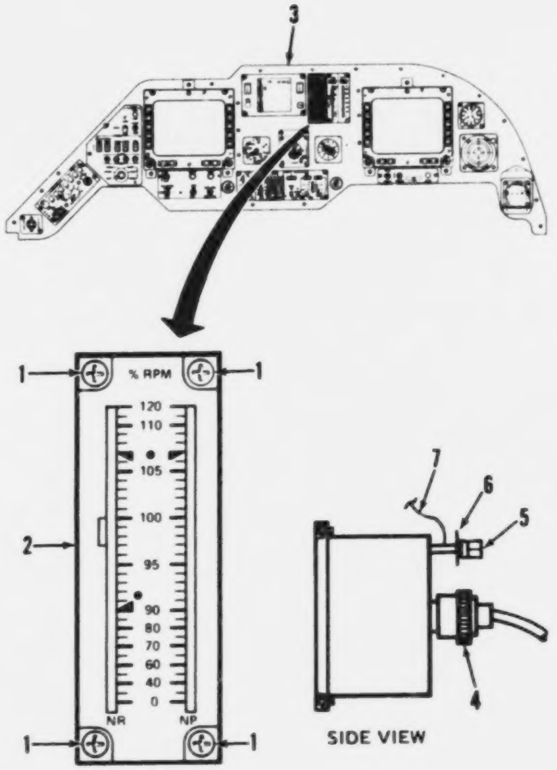
7. Gain access to instrument panel (3) through either crew door.

8. Connect electrical connector (4) to dual tachometer (2).

9. Connect bonding strip (7) to stud on indicator. Install one washer (6) and one nut (5) on stud.

10. Place dual tachometer (2) in its mount, align mounting holes.

11. Install four screws (1).



406075-71C

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-1-1).

END OF TASK

8-1-13. DISASSEMBLE/ASSEMBLE DUAL TACHOMETER (AVIM)

This task covers: Disassembly and Assembly (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Quick Primer (D147)
Sealing, Locking, and Retaining Compound (D148)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

DISASSEMBLE

NOTE

Disassembly of dual tachometer shall be accomplished only to the extent necessary to clean, inspect, or repair by replacing inoperative assembly, subassembly, etc., indicated by the attached maintenance form failure code(s). Failure codes are depicted in Task 8-1-14.

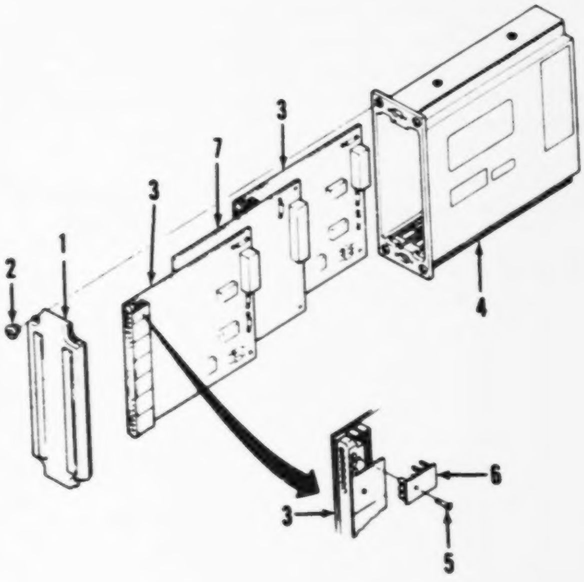
1. Remove front panel (1) by removing four bushings (2).

NOTE

Steps 2. and 3. may be accomplished out of sequence or may be disregarded when not required by the maintenance action.

2. Pull two lamp driver cards (3) from case assembly (4), then remove seven screws (5) and disconnect lamp boards (6).

3. Pull receiver card (7) from case assembly (4).



406075-321B

ASSEMBLE

NOTE

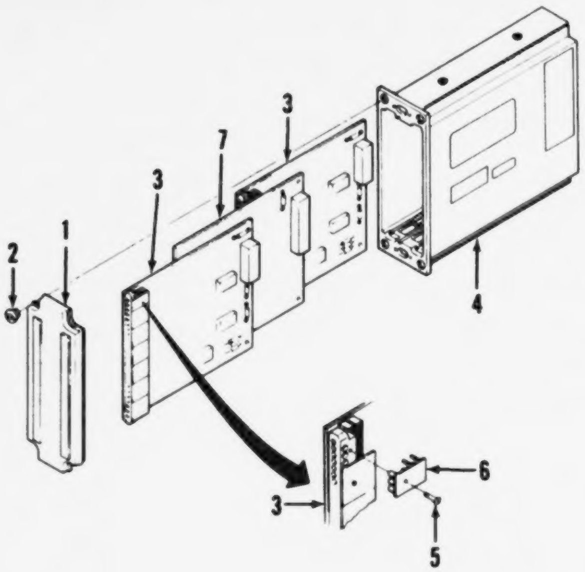
Steps 4. and 5. may be accomplished out of sequence, or disregarded when not required by maintenance action.

Motherboard and motherboard connectors are located within case assembly. Motherboard interconnects various assemblies of MPD.

GO TO NEXT PAGE

8-1-13. DISASSEMBLE/ASSEMBLE DUAL TACHOMETER (AVIM) (CONT)

4. Install receiver card (7) and press into its motherboard connector in case assembly (4).



406075-321B

NOTE

The upper end of analog scale utilizes one three-lamp board followed by six five-lamp boards.

All screws must be lock-sealed during assembly. Failure to comply with this requirement may result in failure of instruments and possible electrical hazards.

NOTE

Lock-sealing of screws requires soaking screws in quick primer (D147) for at least one hour and then dipping in sealing compound (D148) at time of installation.

5. Connect seven lamp boards (6) into each of the two lamp driver cards (3) and install seven screws (5) and then install the two lamp driver cards (3), pressing each card into its motherboard connector in case assembly (4).

6. Place front panel (1) in its mounting position on case assembly (4) and install four bushings (2).

INSPECT

END OF TASK

8-1-14. CLEAN, INSPECT, AND REPAIR DUAL TACHOMETER (AVIM)

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
Air Compressor (25 PSI or Less)
Goggles, Industrial
Brush, Paint
Nonmetallic Brush

Materials:

Lint-free Cloth (D56)
Gloves, Rubber (D119)
Soap (2 oz./gal.) (D23)
Paint, Black (D92)
Isopropyl Alcohol (D150)
Stencil Marking Ink (D174)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1500-204-25/1

CLEAN

WARNING

Compressed air is dangerous when directed toward yourself or another person. The airstream or material blown by the airstream can cause injury, particularly to the eyes or face.

- Use goggles to protect eyes and face.
- Do not exceed 25 psig.
- Do not direct airstream toward yourself or another person.

If injury occurs, seek medical aid.

CAUTION

Compressed air (25 PSI maximum) at the nozzle shall be held no closer than six inches to item being cleaned. Failure to comply with this requirement may result in damage to dual tachometer.

GO TO NEXT PAGE

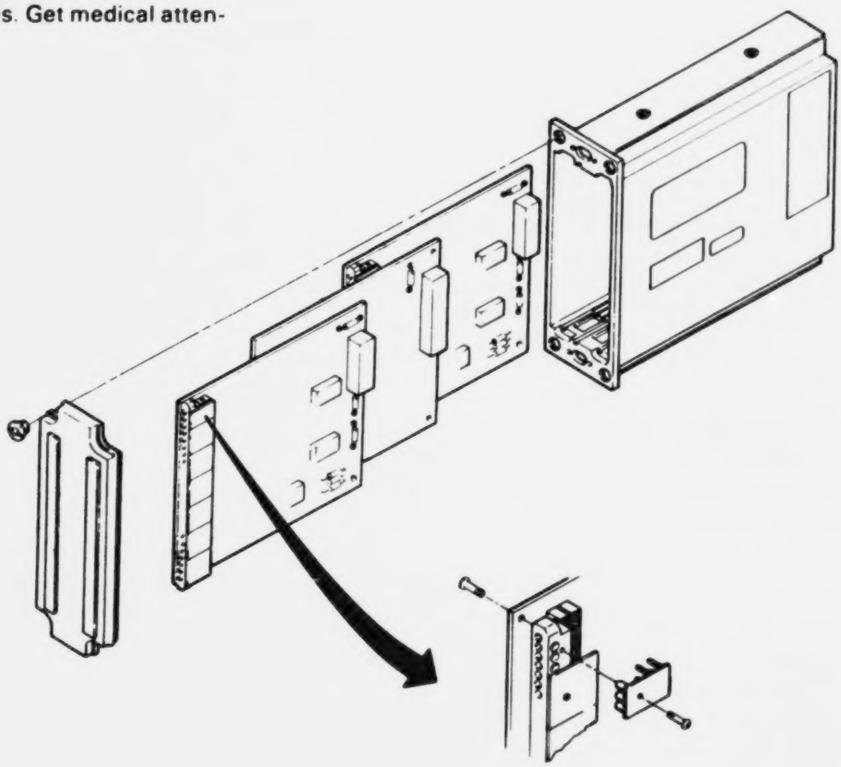
8-1-14. CLEAN, INSPECT, AND REPAIR DUAL TACHOMETER (AVIM) (CONT)

1. Remove dust, dirt, and other foreign matter from components, wiring and surface areas of assemblies, subassemblies, etc., using brush (nonmetallic) and clean, dry, compressed air.

2. Remove ground-in and caked-on dirt from components, assemblies, and subassemblies using soap (D23) mixed with water, (mix 2 ounces of soap (D23) per gallon of water) with a soft nonmetallic brush.

WARNING

Isopropyl alcohol (D150) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated areas, away from heat or open flames. Wear gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.



406075-393

GO TO NEXT PAGE

CAUTION

Alcohol must NOT be used to clean front panel or resistors with color-code value bands. Failure to comply with this requirement may cause markings and codes to be obliterated.

3. Remove grease and film from components, assemblies, and subassemblies, using lint-free cloth (D56) moistened with isopropyl alcohol (D150). (TM 55-1500-204-25/1).

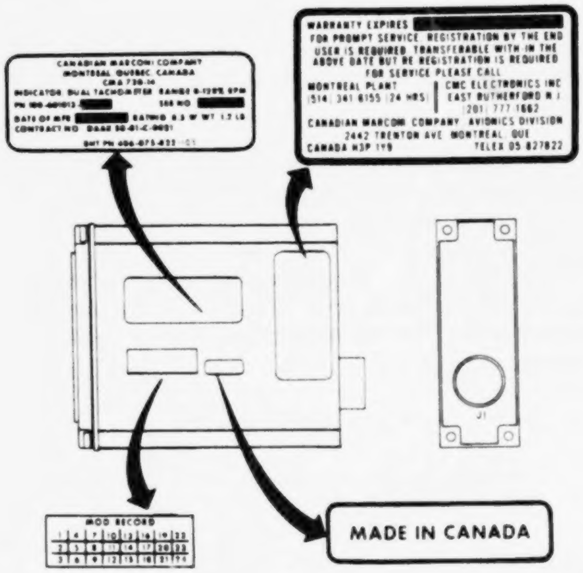
4. Dry all components, subassemblies, and assemblies with clean, dry, compressed air after cleaning with soap and water solution (mix 2 ounces of soap (D23) per gallon of water) or isopropyl alcohol (D150).

INSPECT

5. Check that stenciled marking (reference designator) on the rear of case assembly is properly located and legible.

6. Check electrical connector for bent or broken pins, bent shell, and broken or missing hardware.

7. Check assemblies and subassemblies for loose or missing hardware, for signs of discoloration and blistering that would indicate overheating or arcing, for broken wiring and component leads, and for scratches, dents, and broken components.


CANADIAN MARCONI COMPANY
MONTREAL QUEBEC CANADA
CMA 730-16
INDICATOR DUAL TACHOMETER RANGE 0-120% RPM
PN 100-401013-
SER NO
DATE OF MFR
RATING 6.5 W WT 1.2 LB
CONTRACT NO
BHT PN 406-075-833-101
WARRANTY EXPIRES
FOR PROMPT SERVICE. REGISTRATION BY THE END USER IS REQUIRED. TRANSFERABLE WITH IN THE ABOVE DATE BUT RE REGISTRATION IS REQUIRED
FOR SERVICE PLEASE CALL
MONTREAL PLANT (514) 341 6155 (24 HRS)
CMC ELECTRONICS INC EAST RUTHERFORD N J (201) 777 1662
CANADIAN MARCONI COMPANY AVIONICS DIVISION
2442 TRENTON AVE MONTREAL QUE
CANADA H3P 1Y9
TELEX 05 827822
J1
MOD RECORD
MADE IN CANADA

406075-323

GO TO NEXT PAGE

8-1-14. CLEAN, INSPECT, AND REPAIR DUAL TACHOMETER (AVIM) (CONT)

REPAIR

8. Repair painted surfaces using black lusterless enamel (D92) to touch-up scratches and scraped areas.

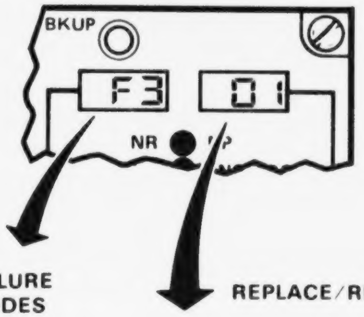
9. Repair reference designator marking using white stencil ink (D174) to make letter and numeral 0.09 inches high.

10. Repair of all other components, subassemblies, assemblies and attaching hardware is accomplished by replacement per failure code(s) on equipment tag.

NOTE

Failure codes entered on equipment tag are from display on MPD indicator.

INSPECT



FAILURE CODES		REPLACE/REPAIR
F3	01	POWER FAIL
F3	02	RECEIVER
F3	03	LAMP DRIVER (LEFT OR RIGHT)
F3	04	RECEIVER
F3	05	NOT CONNECTED
—	—	FRONT PANEL*
—	—	CASE ASSEMBLY*

*AS REQUIRED

406075-322

END OF TASK

8-1-15. REMOVE/INSTALL INSTRUMENT PANEL GLARESHIELD

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Aircraft Mechanic Tool Kit

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer

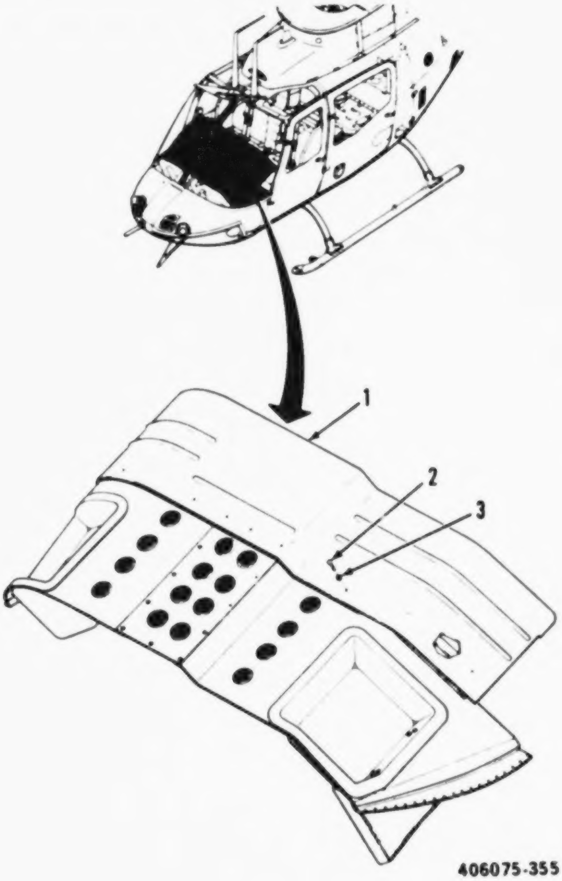
REMOVE

1. Open right or left crew door to gain access to instrument panel glareshield (1).

2. Remove nine screws (2) and washers (3) from top of glareshield (1).

3. Carefully pull glareshield aft from shroud.

4. Remove glareshield from helicopter.



406075-355

GO TO NEXT PAGE

8-1-15. REMOVE/INSTALL INSTRUMENT PANEL GLARESHIELD (CONT)

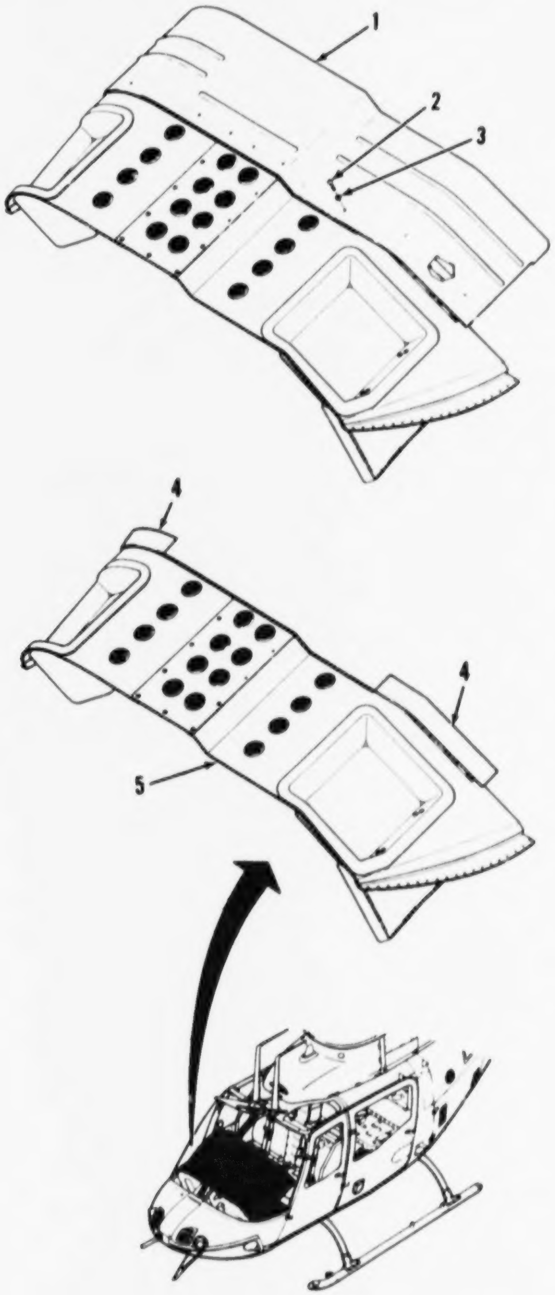
INSTALL

5. Carefully position glareshield (1) onto guides (4) of shroud (5).

6. Secure glareshield (1) by installing nine washers (3) and screws (2) into top of glareshield (1).

INSPECT

Close right or left crew door.



406075-357C

END OF TASK

8-1-16. CLEAN, INSPECT, AND REPAIR INSTRUMENT PANEL GLARESHIELD

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Airframe Repairer Tool Kit
Aircraft Mechanic Tool Kit

Parts:

Track
Stop Assembly

Materials:

Line-free Cloth (D56)
Drycleaning Solvent (D1)
Rubber Gloves (D119)
Sandpaper, 400 Grit (D11)
Wiping Rag (D53)
Epoxy Enamel, Black (D159)

Personnel Required:

66S Scout Helicopter Technical Inspector
67S Scout Helicopter Repairer
68G Aircraft Structure Repairer

References:

TM 55-1500-204-25/1

GO TO NEXT PAGE

8-1-16. CLEAN, INSPECT, AND REPAIR INSTRUMENT PANEL GLARESHIELD (CONT)

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CLEAN

1. Remove grease, fungus, and dirt with a clean lint-free cloth (D56) dampened with drycleaning solvent (D1).

2. Remove moisture, dust, and loose dirt with a wiping rag (D53).

INSPECT

3. Inspect plastic for scratches, cracks, and tears.

REPAIR

4. Repair scratches, cracks, and tears in plastic in accordance with instructions in TM 55-1500-204-25/1.

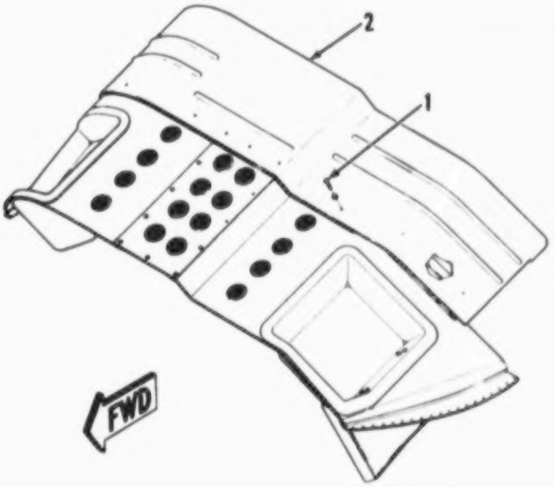
5. Remove minor scratches with sandpaper (D11).

6. Touch up sandpapered area with black epoxy enamel (D159).

7. Tighten loose mounting screws (1).

8. Replace glareshield (2) if defective.

INSPECT



406075-356

END OF TASK

Section II. FLIGHT INSTRUMENTS

This section includes procedures for operational checks, troubleshooting, cleaning, repairing, inspection, removal, installation and follow-on maintenance of flight instruments.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Operational Check — Standby Altimeter	8-2-1	8-38
Clean, Inspect, and Repair Standby Altimeter	8-2-2	8-41
Remove/Install Standby Altimeter	8-2-3	8-43
Operational Check — Standby Attitude Indicator	8-2-4	8-44
Clean, Inspect, and Repair Standby Attitude Indicator	8-2-5	8-46
Remove/Install Standby Attitude Indicator	8-2-6	8-48
Operational Check — Standby Airspeed Indicator	8-2-7	8-49
Clean, Inspect, and Repair Standby Airspeed Indicator	8-2-8	8-51
Remove Standby Airspeed Indicator	8-2-9	8-53
Install Standby Airspeed Indicator	8-2-10	8-54

8-2-1. OPERATIONAL CHECK — STANDBY ALTIMETER

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
APU

Personnel Required:

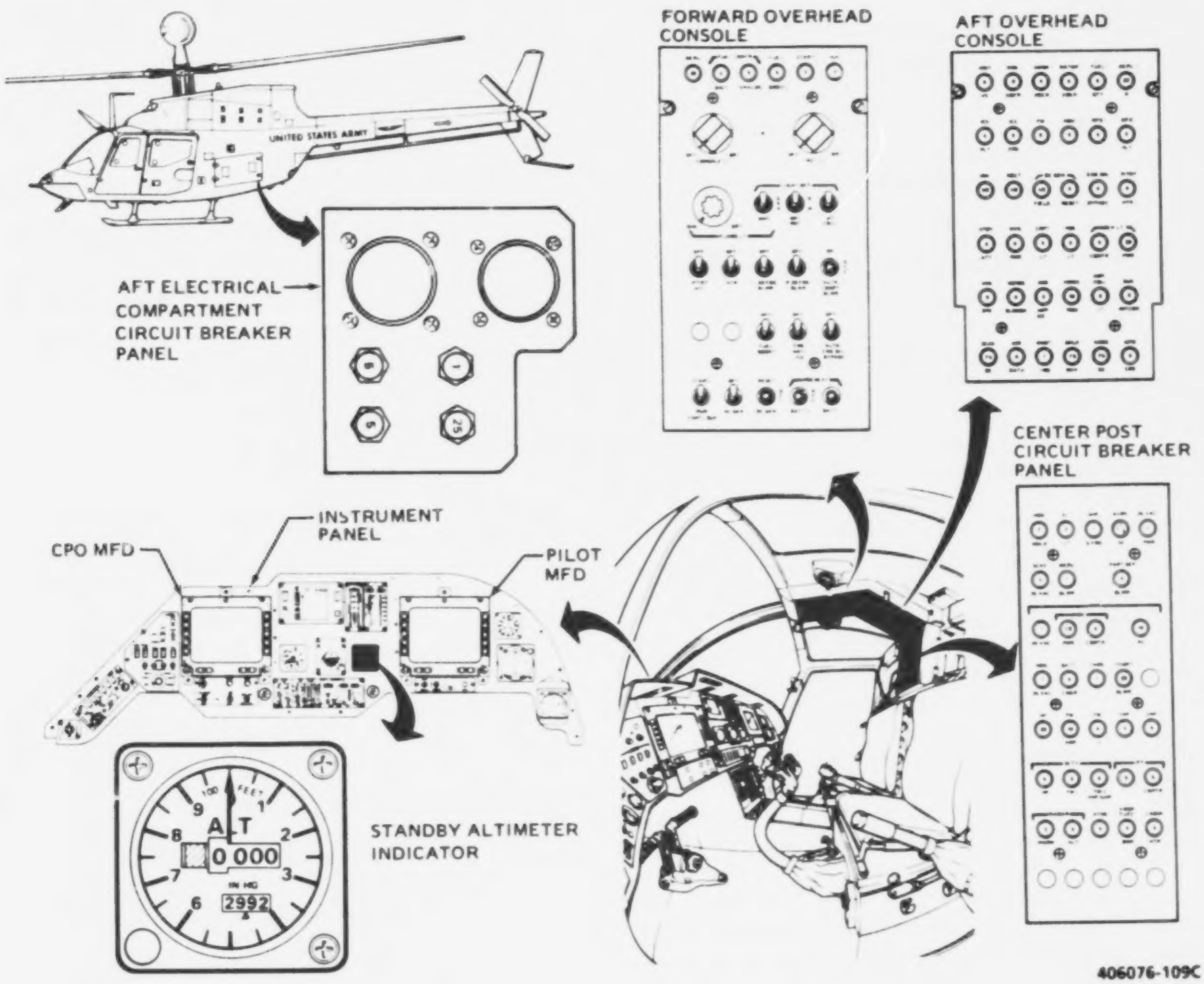
68F Aircraft Electrician

Equipment Condition:

Pitot-Static and Air Data Operational Check Performed (Task 8-3-1)
All Switches — OFF
All Circuit Breakers Closed (Overhead Console/Center Post, Nose and Aft Electrical Compartment)

GO TO NEXT PAGE

8-2-1. OPERATIONAL CHECK — STANDBY ALTIMETER (CONT)


FORWARD OVERHEAD CONSOLE
AFT OVERHEAD CONSOLE
UNITED STATES ARMY
AFT ELECTRICAL COMPARTMENT CIRCUIT BREAKER PANEL
CENTER POST CIRCUIT BREAKER PANEL
INSTRUMENT PANEL
CPO MFD
PILOT MFD
STANDBY ALTIMETER INDICATOR
100 FEET
ALT
0 000
IN HG
2992
1
2
3
6
7
8
9

406076-109C

GO TO NEXT PAGE

8-2-1. OPERATIONAL CHECK — STANDBY ALTIMETER (CONT)

NOTE

> Acknowledge cautions and warnings before pressing menu or line address keys.

1. On overhead console panel (1) and center post circuit breaker panel (2) open the following circuit breakers:

   IGN (3)
   START (4)
   PART SEP BLWR (5)
   HF (6)

2. Set PREHEAT/OFF/BATT 1 switch (7) to BATT 1 on forward overhead console (1).

3. Turn INST LT control (8) on forward overhead console (1) clockwise to BRT.

4. Turn INST LT control (8) counterclockwise and verify that altimeter (9) lighting dims.

NOTE

> The standard barometric pressure day (29.92 IN HG (inches of mercury) representing sea level) is used herein for the purpose of explanation only. Local barometric pressure must be used to obtain accurate altitude indications.

5. On altimeter (9) turn BARO PRESS/SET control (10) to set present barometric pressure indicator (11) and verify that altimeter indication (12) shows approximate local altitude above sea level.

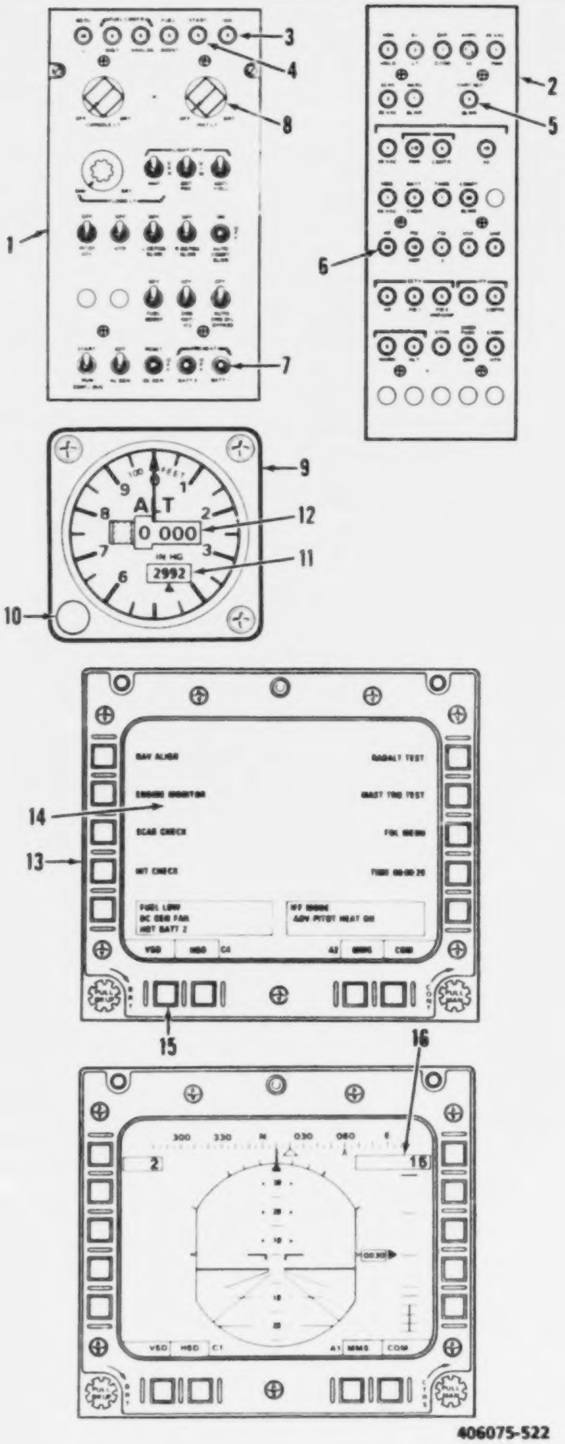
6. On MFD (13) initial page (14), press and release VSD (vertical situation display) switch (15). Check that MFD (13) displays the proper altitude (16). Standby altimeter should read approximately the same.

7. On each multifunction display (MFD) (13) press and release VSD (vertical situation display) switch (15).

8. Turn altimeter BARO PRESS/SET control (10) to vary altimeter indications (12) and verify that altitude (16) on each MFD (13) also varies.

9. Turn PREHEAT/OFF/BATT 1 switch (7) to OFF.

END OF TASK



8-2-2 CLEAN, INSPECT, AND REPAIR STANDBY ALTIMETER

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Materials:

Drycleaning Solvent (D1)
Lint-free Cloth (D56)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1520-248-10
TB 55-1500-314-25
AR 700-52
AR 755-15
TM 3-261

GO TO NEXT PAGE

8-2-2. CLEAN, INSPECT, AND REPAIR STANDBY ALTIMETER (CONT)

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean face of indicator with drycleaning solvent (D1).

2. Dry face of indicator with a dry, lint-free cloth (D56).

INSPECT

3. Inspect for loose, cracked, or broken BARO PRESS/SET control and face cover.

4. Inspect pitot static lines and connections for security and damage (Task 8-3-2).

5. Inspect electrical connector for damage and security.

6. Inspect for proper and secure mounting.

7. Inspect all markings and decals for completeness and legibility (TM 55-1520-248-10).

REPAIR

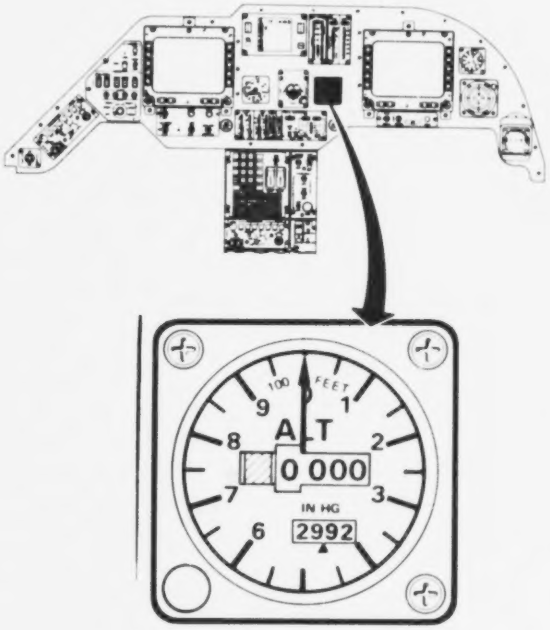
8. Secure in mount (Task 8-2-3).

9. Repair pitot static lines as needed (Task 8-3-9).

10. Repair electrical connector and wiring as needed.

11. Replace altimeter if face cover or control knob is broken.

END OF TASK



406075-112A

INSPECT

FOLLOW-ON MAINTENANCE

Perform pitot static and air data system operational check (Task 8-3-1) as required.

8-2-3. REMOVE/INSTALL STANDBY ALTIMETER

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Parts:

Packing

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

MPD Removed (Task 8-1-5)

REMOVE

1. Gain access to instrument panel by opening pilot crew door.

2. Access rear of altimeter through MPD mount and remove static line nut (1) at rear of altimeter (2).

3. Disconnect electrical connector (3).

4. Remove three screws (4) and altimeter (2).

5. Remove reducer (5) and discard packing (6).

INSTALL

6. Insert new packing (6) on reducer (5).

7. Install reducer (5) in altimeter (2).

8. Connect static line nut (1) and electrical connector (3).

9. Position altimeter (2) in its mount, align mounting holes, and install three screws (4).

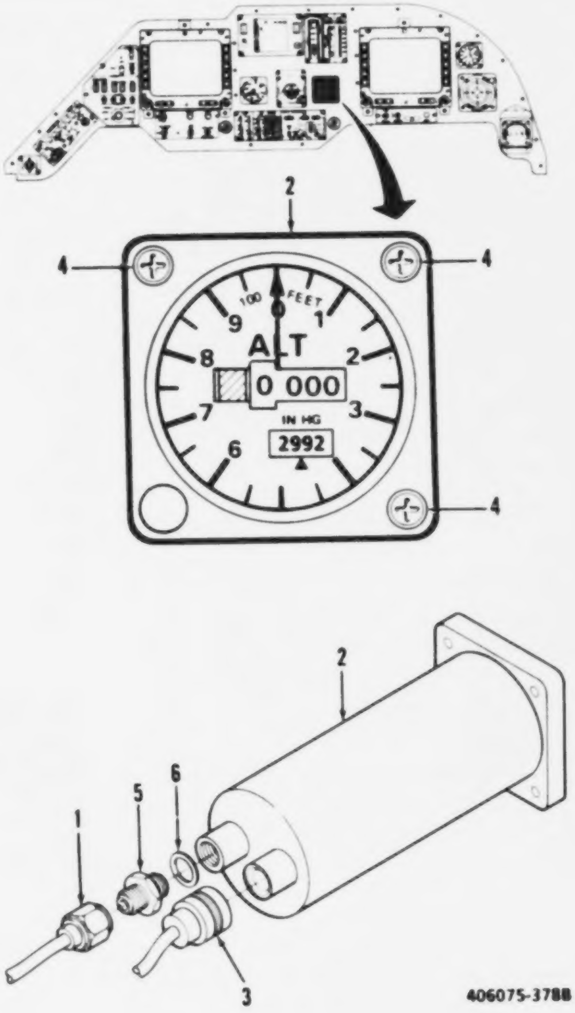
FOLLOW-ON MAINTENANCE

Install MPD (Task 8-1-5).

Perform operational check (Task 8-2-1).

Perform pitot-static and air data system operational check (Task 8-3-1).

END OF TASK



8-2-4. OPERATIONAL CHECK — STANDBY ATTITUDE INDICATOR

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

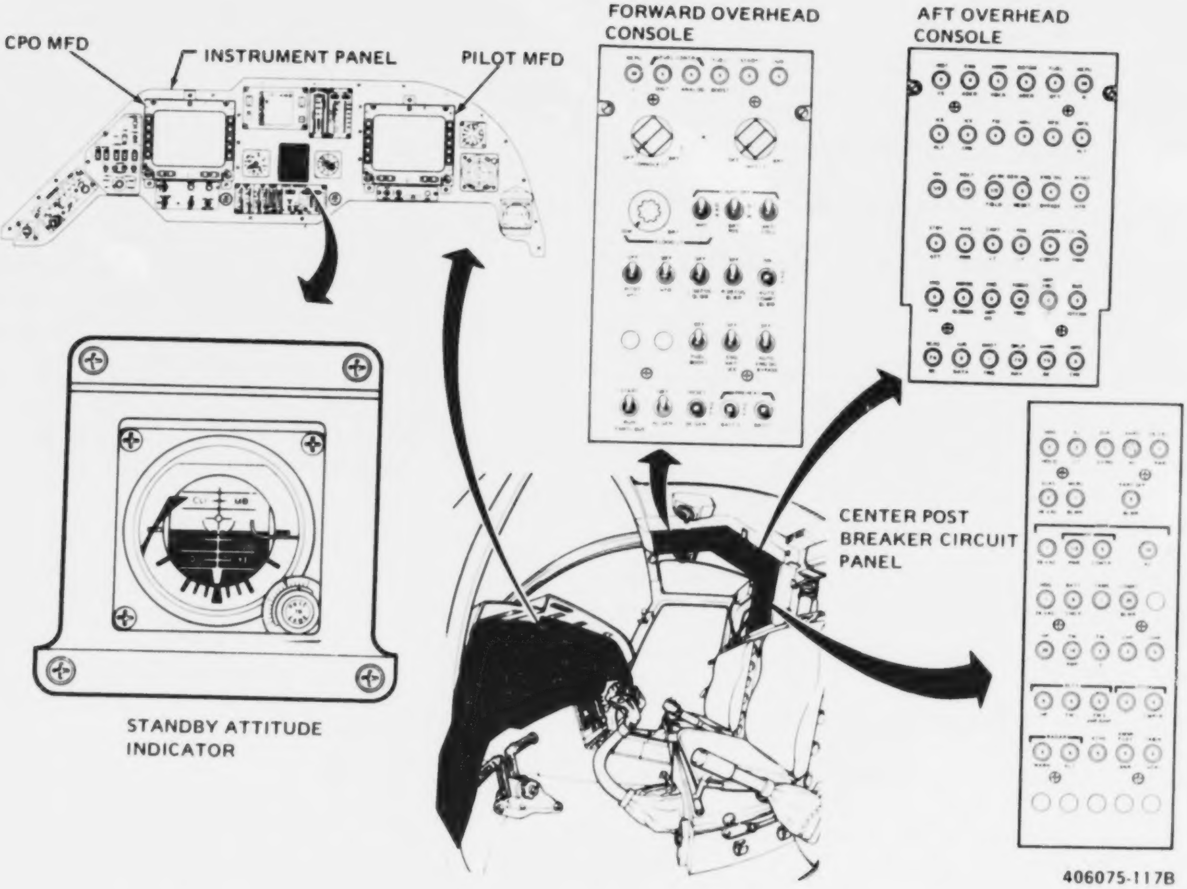
Electrical Repairer Tool Kit
APU

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

All Switches — OFF
All Circuit Breakers — Closed (Overhead Console/Center Post, Nose, and Aft Electrical Compartment)


CPO MFD
INSTRUMENT PANEL
PILOT MFD
FORWARD OVERHEAD CONSOLE
AFT OVERHEAD CONSOLE
CENTER POST BREAKER CIRCUIT PANEL
STANDBY ATTITUDE INDICATOR
406075-117B

GO TO NEXT PAGE

8-2-4. OPERATIONAL CHECK — STANDBY ATTITUDE INDICATOR (CONT)

NOTE

Acknowledge cautions and warnings before pressing menu or line address keys.

1. On overhead console panel (1) and center post circuit breaker panel (2) open the following circuit breakers:

IGN (3)
START (4)
PART SEP BLWR (5)
HF (6)

2. Apply 28 VDC external power (Task 9-3-10).

3. Turn INST LT control (7) clockwise to BRT on overhead console (1).

4. Verify that red OFF flag (8) moves out of view on standby attitude indicator (9).

5. Pull the PULL TO CAGE knob (10) to the fully extended position and allow sphere (11) to stabilize.

6. Verify that roll (12) and pitch (13) displays erect within ± 1 degree, then release knob.

7. Turn PULL TO CAGE knob (10):

a. Clockwise and verify that pitch display (13) indicates pitchup.

b. Counterclockwise and verify that pitch display (13) indicates pitch-down.

c. Clockwise to center pitch display (13).

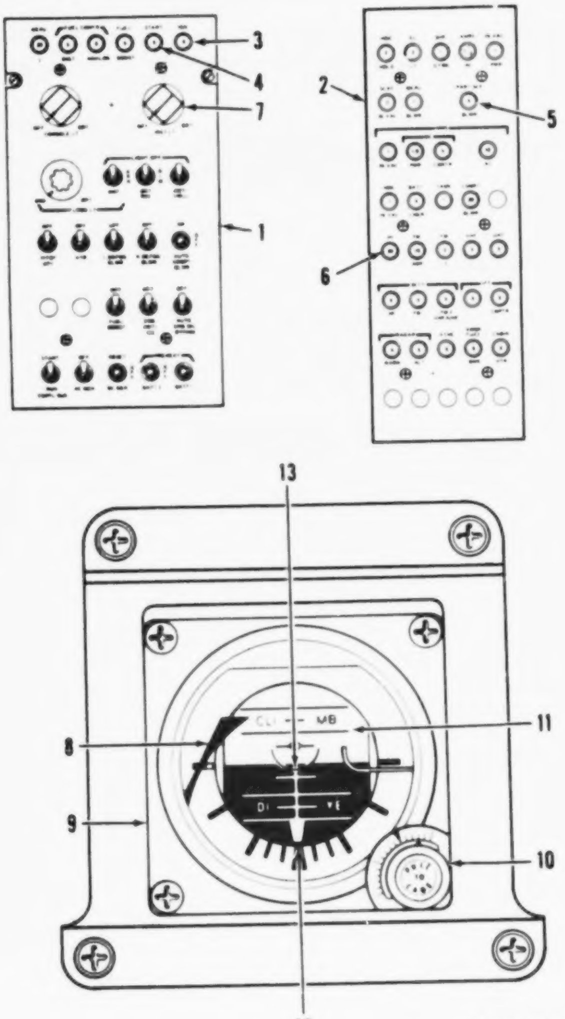
NOTE

Green electroluminescent lighting is difficult to see in daylight. Shielding the indicator may be required.

8. Verify that indicator (9) is lit (bright) and varies (dims) when INST LT control (7) is turned counterclockwise.

9. Turn off external dc electrical power (Task 9-3-11).

END OF TASK



406075-414A

8-2-5. CLEAN, INSPECT, AND REPAIR STANDBY ATTITUDE INDICATOR

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Materials:

Drycleaning Solvent (D1)
Lint-free Cloth (D56)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1520-248-10
TB 55-1500-314-25
AR 700-52
AR 755-15
TM 3-261

GO TO NEXT PAGE

8-2-5 CLEAN, INSPECT, AND REPAIR STANDBY ATTITUDE INDICATOR (CONT)

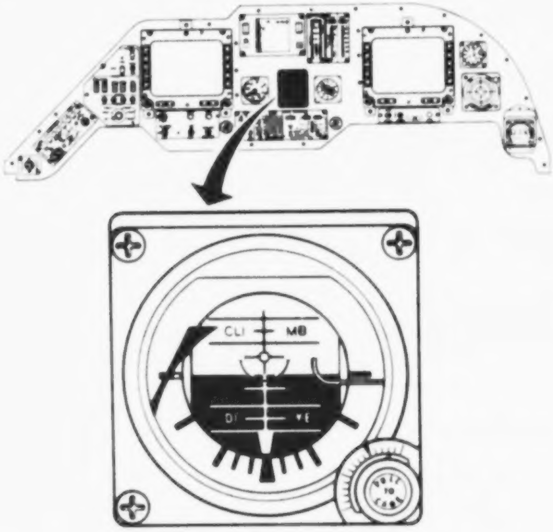
CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean face of indicator with drycleaning solvent (D1).

2. Dry face of indicator with a dry, lint-free cloth (D56).



406075-120A

INSPECT

3. Inspect for loose, cracked, or broken PULL TO CAGE control and face cover.

4. Inspect electrical connector and wiring for security and damage.

5. Inspect for proper and secure mounting.

6. Inspect all markings and decals for completeness and legibility (TM 55-1520-248-10).

REPAIR

7. Secure indicator in mounting as needed (Task 8-2-6).

8. Repair electrical connector and wiring as needed.

INSPECT

END OF TASK

8-2-6. REMOVE/INSTALL STANDBY ATTITUDE INDICATOR

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

REMOVE

1. Gain access to instrument panel through either crew door.

2. Remove three screws (1) and pull indicator (2) from its mount as far as wiring (3) will allow.

3. Disconnect electrical connector (4) and remove indicator (2).

INSTALL

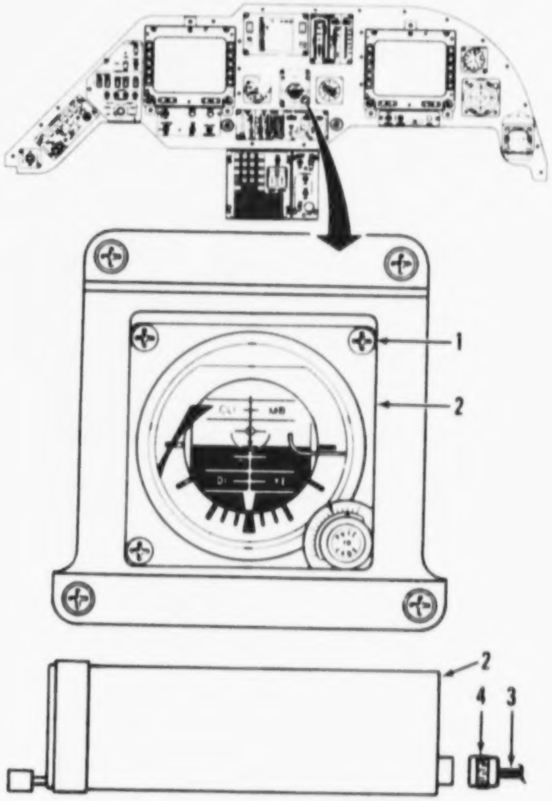
4. Gain access to instrument panel through either crew door.

5. Connect electrical connector (4) and place indicator (2) in its mount.

6. Install three screws (1).

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-2-4).



406075-416

END OF TASK

8-2-7. OPERATIONAL CHECK — STANDBY AIRSPEED INDICATOR

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

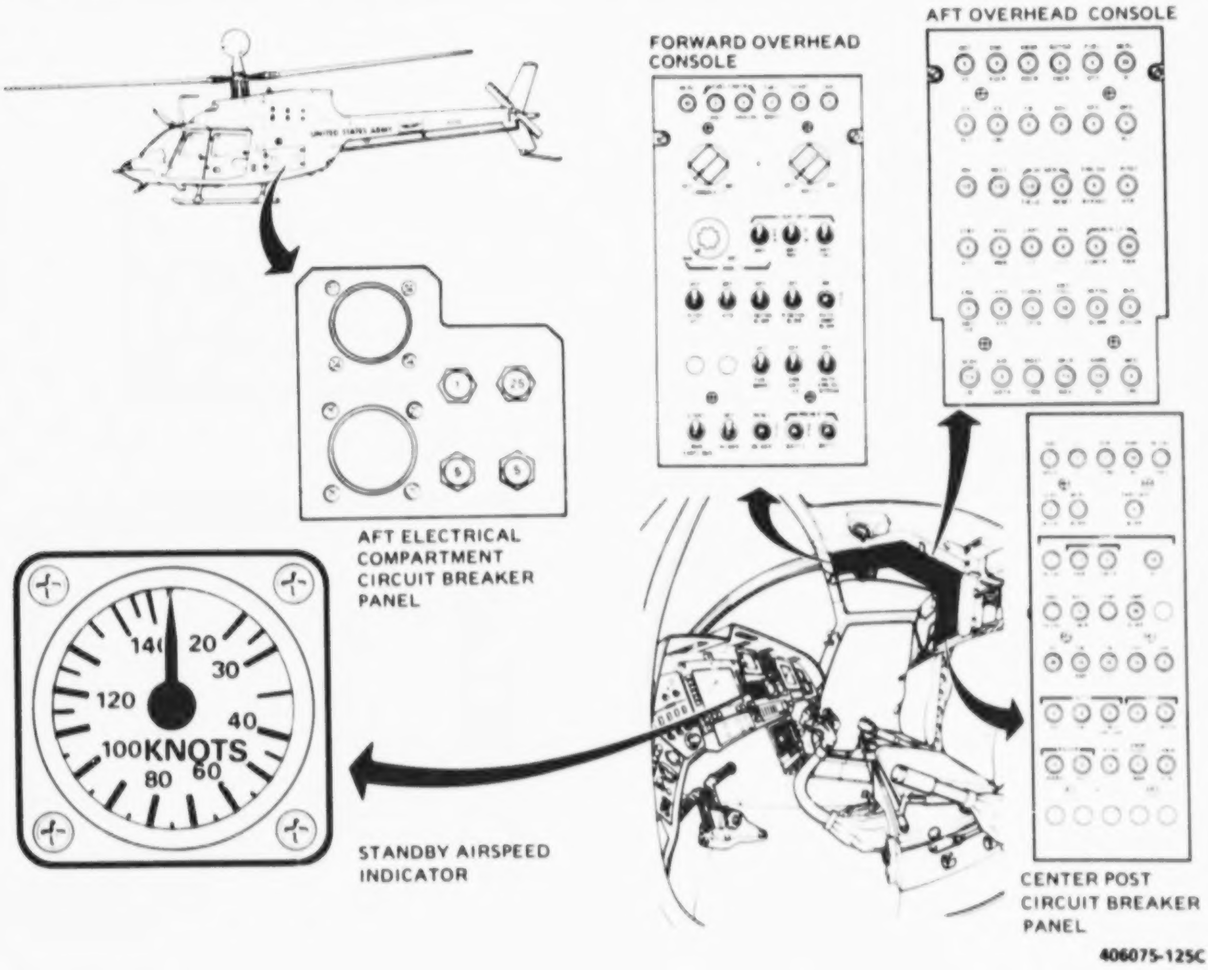
Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

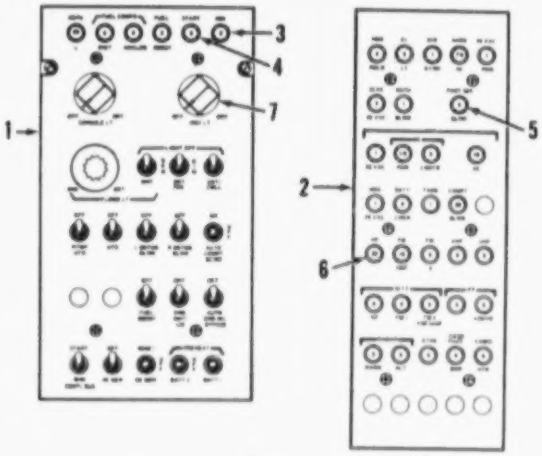
Equipment Condition:

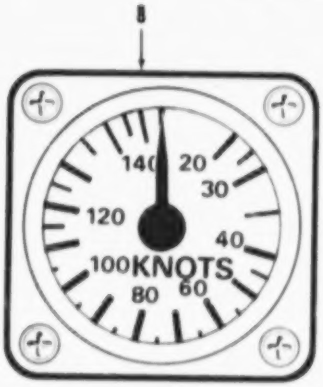
Pitot-Static and Air Data System Operational Check Performed (Task 8-3-1)
All Switches — OFF
All Circuit Breakers — Closed (Overhead Console/Center Post, Nose, and Aft Electrical Compartment)


FORWARD OVERHEAD CONSOLE
AFT OVERHEAD CONSOLE
AFT ELECTRICAL COMPARTMENT CIRCUIT BREAKER PANEL
140
20
30
120
40
100
KNOTS
80
60
STANDBY AIRSPEED INDICATOR
CENTER POST CIRCUIT BREAKER PANEL
406075-125C

GO TO NEXT PAGE

8-2-7. OPERATIONAL CHECK — STANDBY AIRSPEED INDICATOR (CONT)





NOTE

Acknowledge cautions and warnings before pressing menu or line address keys.

1. On overhead console panel (1) and center post circuit breaker panel (2) open the following circuit breakers:

   IGN (3)
   START (4)
   PART SEP BLWR (5)
   HF (6)

2. Apply 28 VDC external power (Task 9-3-10).

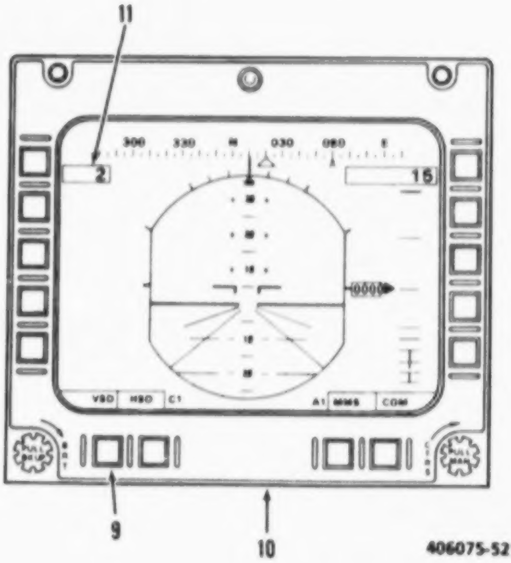
3. Turn INST LT control (7) on forward overhead console (1) to BRT and verify that airspeed indicator (8) is lit.

4. Turn INST LT control (7) counterclockwise and verify that airspeed indicator (8) lighting dims.

5. Press and release VSD (vertical situation display) switch (9) on each multifunction display (MFD) (10).

6. Verify that airspeed indication (11) is illuminated on each MFD (10).

7. Remove 28 VDC external power (Task 9-3-11).



END OF TASK

406075-521

8-2-8. CLEAN, INSPECT, AND REPAIR STANDBY AIRSPEED INDICATOR

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Materials:

Drycleaning Solvent (D1)
Lint-free Cloth (D56)
Gloves, Rubber (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1520-248-10
TB 55-1500-314-25
AR 700-52
AR 755-15
TM 3-261

GO TO NEXT PAGE

8-2-8 CLEAN, INSPECT, AND REPAIR STANDBY AIRSPEED INDICATOR (CONT)

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean face of indicator with drycleaning solvent (D1).

2. Dry face of indicator with a dry, lint-free cloth (D56).

INSPECT

3. Inspect for loose, cracked, or broken face cover.

4. Inspect pitot static lines and connections for security and damage (Task 8-3-2).

5. Inspect for proper and secure mounting.

6. Inspect electrical connector and wiring for damage and security.

7. Inspect all markings and decals for completeness and legibility (TM 55-1520-248-10).

REPAIR

8. Replace pitot static lines as needed (Tasks 8-3-8 and 8-3-9).

9. Repair electrical connector and wiring as needed.

10. Secure indicator in mount as needed (Task 8-2-10).

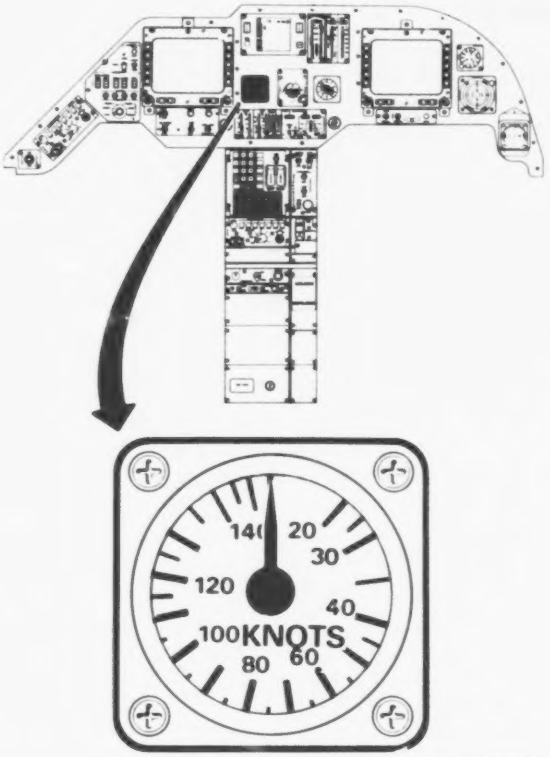
11. Replace airspeed indicator if face cover is loose, cracked, or broken.

INSPECT

FOLLOW-ON MAINTENANCE

Perform pitot-static and air data system operational check as required (Task 8-3-1).

END OF TASK



406075-128B

8-2-9 REMOVE STANDBY AIRSPEED INDICATOR

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

MPD Removed (Task 8-1-5)

1. Gain access to instrument panel by opening either crew door.

2. Access rear of airspeed indicator through MPD mount and remove pitot tube nut (1) from pitot union (2).

3. Remove static tube nut (3) from static reducer (4).

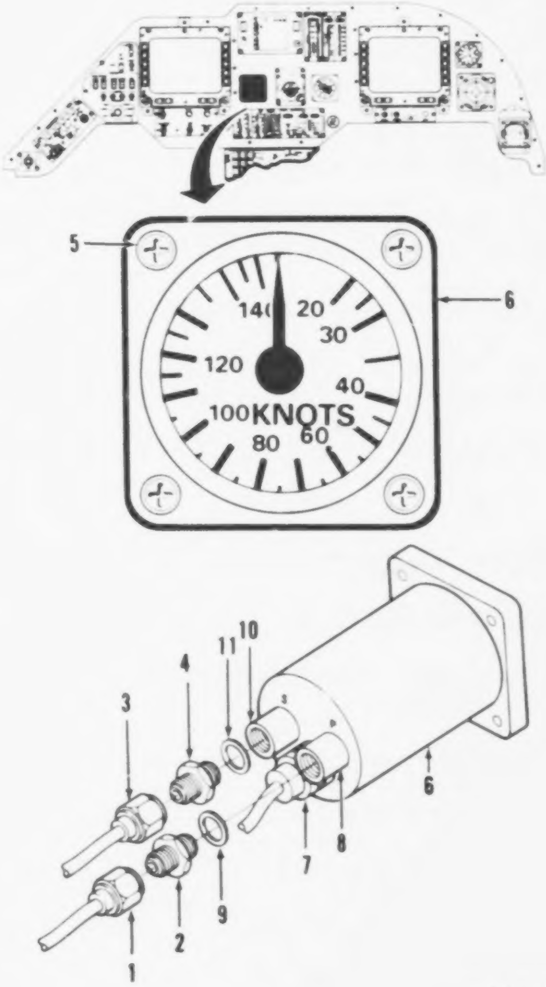
4. Remove four screws (5) from face of indicator (6).

5. Pull indicator (6) from instrument panel as far as wiring will allow.

6. Disconnect electrical connector (7).

7. Remove pitot union (2) from pitot coupling (8) of indicator (6) and discard packing (9).

8. Remove reducer (4) from static coupling (10) of indicator (6) and discard packing (11).



406075-130B

END OF TASK

8-2-10. INSTALL STANDBY AIRSPEED INDICATOR

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Parts:

Packing (2)

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

MPD Removed (Task 8-1-5)

1. Insert packing (1) on static reducer (2) and install static reducer (2) into static coupling (3).

2. Insert packing (4) on pitot union (5) and install pitot union (5) into pitot coupling (6).

3. Position indicator (7) near its mounting hole and connect electrical connector (8).

4. Position airspeed indicator in its mount.

5. Access rear of indicator thru MPD mount and connect static tube nut (9) to static reducer (2).

6. Connect pitot tube nut (10) to pitot union (5).

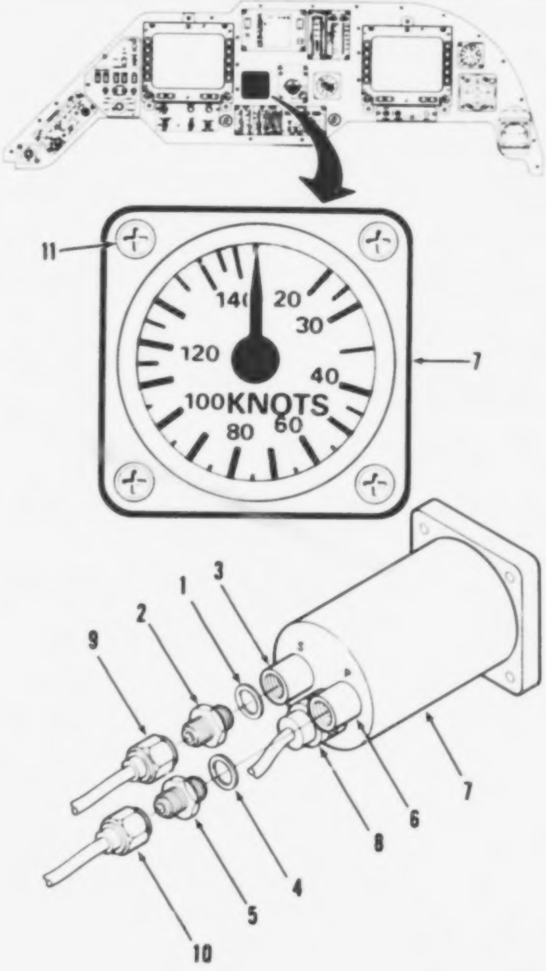
7. Install four screws (11).

FOLLOW-ON MAINTENANCE

Install MPD (Task 8-1-5).

Perform pitot-static and air data system operational check (Task 8-3-1).

Perform airspeed indicator operational check (Task 8-2-7).



END OF TASK

406075-389A

Section III. PITOT-STATIC INSTRUMENT AND AIR DATA SYSTEMS

This section includes maintenance procedures for operational check, troubleshooting, inspection, removal, cleaning, installation, and follow-on maintenance of the pitot-static instrument and air data systems.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Operational Check — Pitot-Static and Air Data System	8-3-1	8-56
Clean, Inspect, and Repair Pitot-Static Tubing and Fittings	8-3-2	8-62
Remove/Install Bulb P/N 5683C (For Air Data System)	8-3-3	8-64
Remove Air Data Transducer	8-3-4	8-66
Clean, Inspect, and Repair Air Data Transducer	8-3-5	8-67
Install Air Data Transducer	8-3-6	8-68
Remove/Install Air Data Power Supply	8-3-7	8-69
Remove Pitot-Static Tubing and Fittings	8-3-8	8-70
Install Pitot-Static Tubing and Fittings	8-3-9	8-75
Operational Check — Pitot Tube Heater	8-3-10	8-82
Remove/Install Pitot Tube	8-3-11	8-84
Clean, Inspect, and Repair Pitot Tube	8-3-12	8-86

8-3-1. OPERATIONAL CHECK — PITOT-STATIC AND AIR DATA SYSTEM

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

Tools:

Electrical Repairer Tool Kit
Pitot-Static Tester
APU
Work Aid H-205

Materials:

Black Electrical Tape (D186)

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

All Circuit Breakers — Closed (Overhead Console/ Center Post Circuit Breaker Panel, Nose and Aft Electrical Compartment)
All Switches — OFF
MPD Removed (Task 8-1-5)

General Safety Instructions:

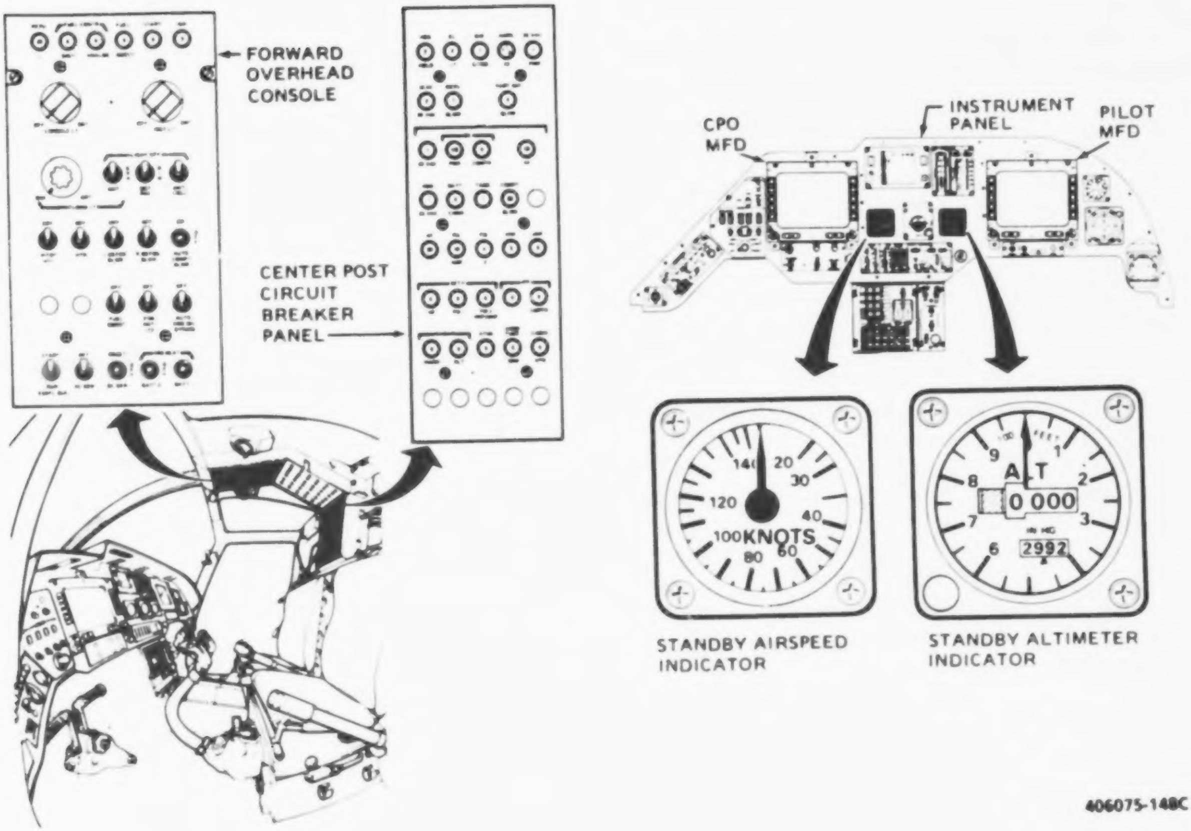
WARNING

PITOT HEAT

The pitot tube assembly is very hot during and immediately after operations requiring pitot heat. Keep hands and other parts of body away from this area. If burns occurs, seek medical aid.

GO TO NEXT PAGE

8-3-1. OPERATIONAL CHECK — PITOT-STATIC AND AIR DATA SYSTEM (CONT)


FORWARD OVERHEAD CONSOLE
CENTER POST CIRCUIT BREAKER PANEL
CPO MFD
INSTRUMENT PANEL
PILOT MFD
140
20
30
120
40
100
KNOTS
80
60
9
1
8
ALT
2
0 000
7
3
6
2992
STANDBY AIRSPEED INDICATOR
STANDBY ALTIMETER INDICATOR

406075-148C

GO TO NEXT PAGE

8-3-1. OPERATIONAL CHECK — PITOT-STATIC AND AIR DATA SYSTEM (CONT)

1. On overhead console panel (1) and center post circuit breaker panel (2) open the following circuit breakers:

   IGN (3)
   START (4)
   PART SEP BLWR (5)
   HF (6)

2. Gain access to instrument panel through left crew door.

NOTE

Pitot line connector may need to be removed and reconnected to gain access to the static line connector.

3. Disconnect static line connector (7) from standby airspeed indicator (8) (Task 8-2-9) and cap off line.

4. Seal off two static ports (9) using black electrical tape (D186).

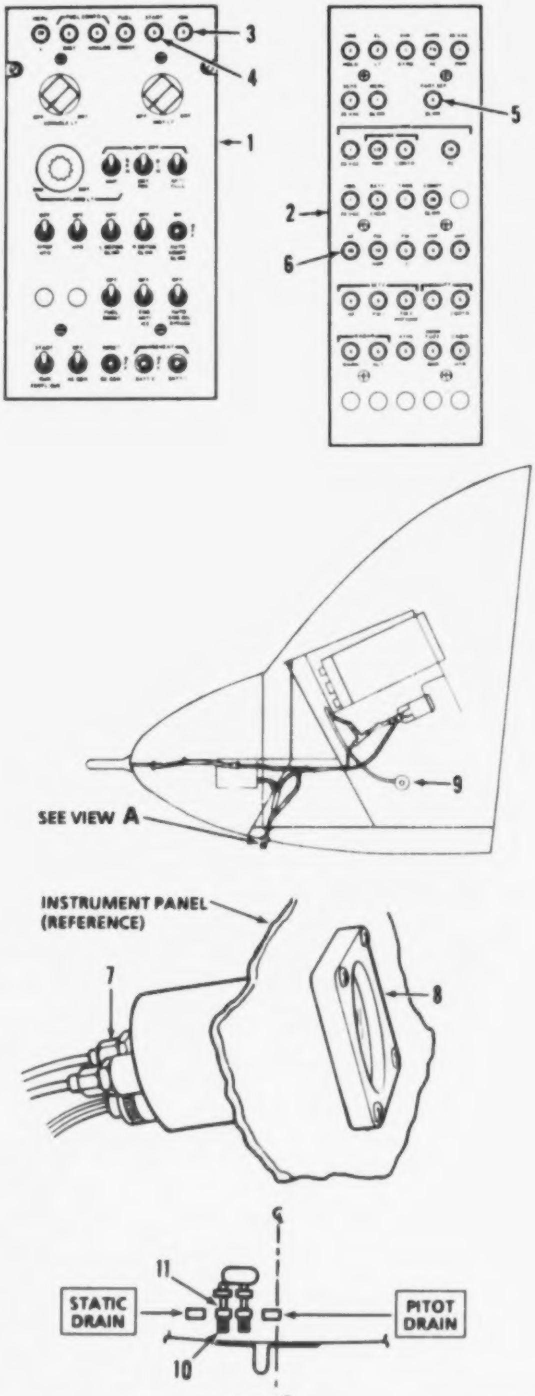
5. Remove plug (10) from static drain line connector nut (11).

NOTE

Helicopter static ports must be completely sealed for the measurements to be valid.

6. Install work aid H-205 to static drain line connector nut (11).

7. Connect pitot static tester to work aid H-205.



VIEW A
LOOKING AFT AT BOTTOM

406075-474A

GO TO NEXT PAGE

8-3-1. OPERATIONAL CHECK — PITOT-STATIC AND AIR DATA SYSTEM (CONT)

8. Apply low pressure (vacuum) until helicopter standby altimeter (12) indicates 1000 feet above ambient pressure altitude.

9. Close low pressure (vacuum) line shut-off valve, wait one minute, then verify that standby altimeter indication does not exceed an indicated drop of 150 feet.

10. Apply 28 VDC external power. (Task 9-3-10).

11. On forward overhead console (1), set PREHEAT/OFF/BATT 1 switch (13) to BATT 1.

12. Verify that initial page (14) appears on each MFD (15).

13. Place hand on standby altimeter (12) and verify vibrator is operating.

14. On each MFD (15) initial page (14), press and release VSD (vertical situation display) switch (16).

NOTE

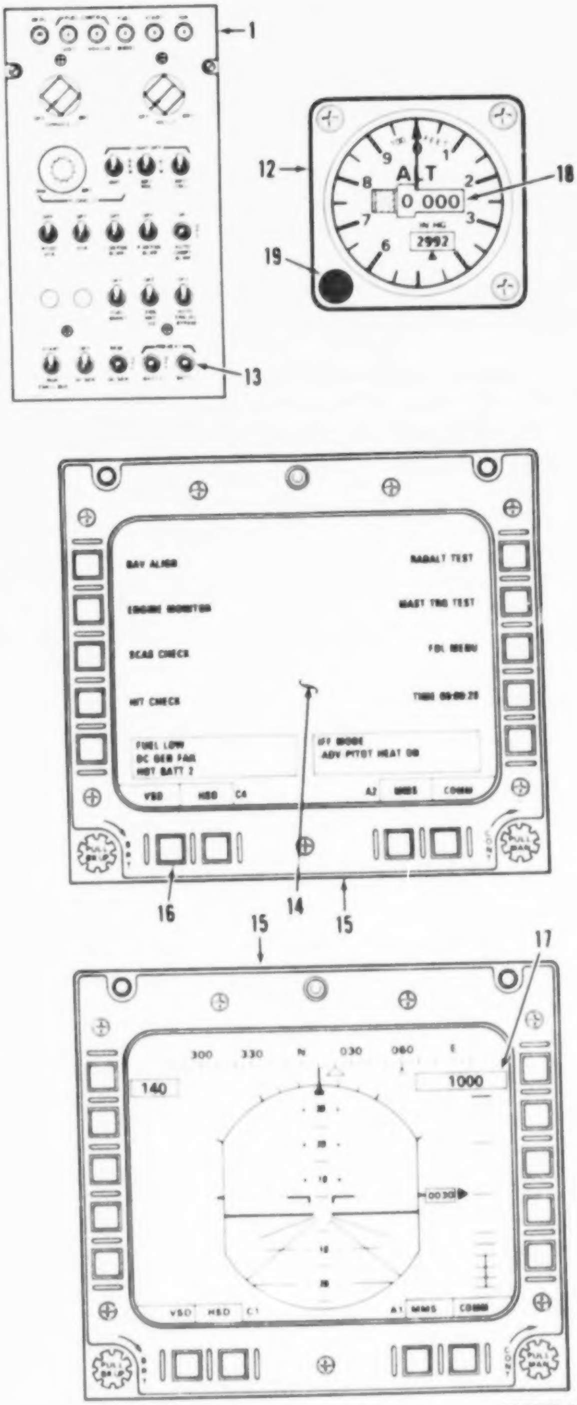
Acknowledge cautions and warnings before pressing menu or line address keys.

15. With pitot-static tester apply low pressure (vacuum) until 1000 feet above ambient pressure altitude indication (17) is indicated on each MFD (15); close shut-off valve, wait one minute, then verify that leakage does not exceed an indicated drop of 150 feet.

16. On standby altimeter (12) verify that 1000 (±75) feet (18) is indicated.

17. Rotate BARO PRESS/SET knob (19) and verify that altitude indication (17) on each MFD (15) varies by same amount.

18. Remove black electrical tape (D186) from both static ports (9) remove tester connector from work aid H-205.


1
12
18
19
ALT
0 000
2992
13
NAV ALIGN
ENGINE MONITOR
SCAS CHECK
HIT CHECK
RADALT TEST
MAST TRQ TEST
FDL MENU
FUEL LOW
DC GEN FAIL
VSD
HSD
COMM
16
14
15
15
17
140
1000
300
330
N
030
060
E
VSD
HSD
C1
MMS
COMM
FULL BRT
FULL DIM

406075-420A

GO TO NEXT PAGE

8-3-1. OPERATIONAL CHECK — PITOT-STATIC AND AIR DATA SYSTEM (CONT)

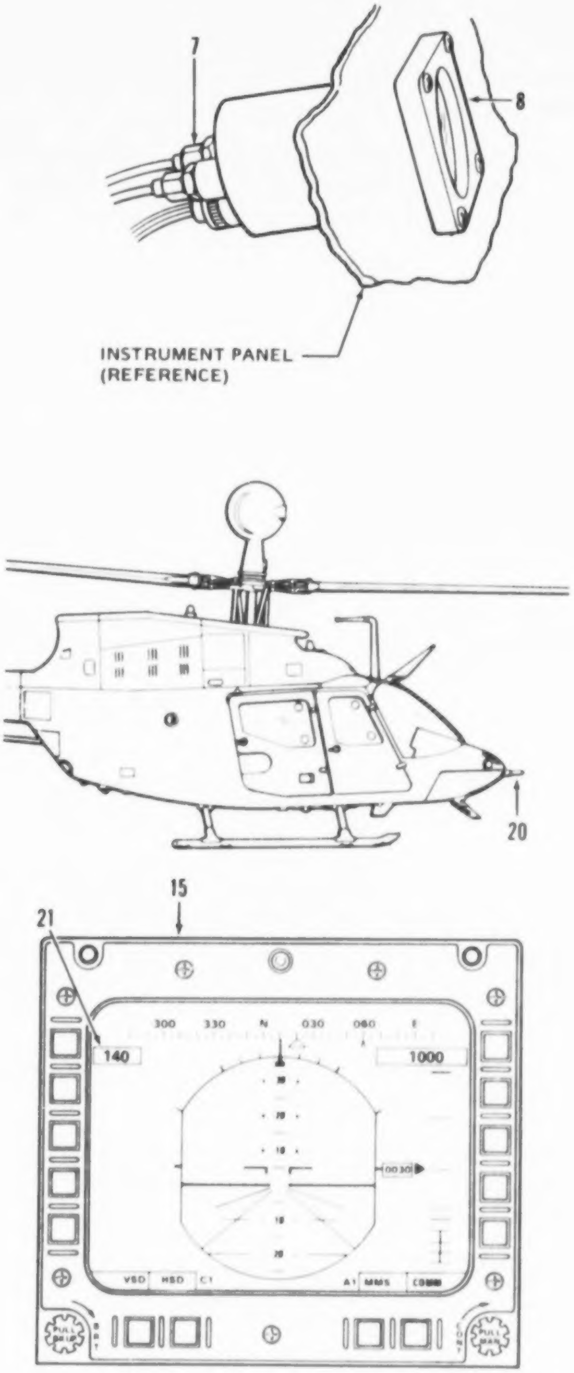
NOTE

Pitot line connector may need to be removed and reconnected to gain access to the static line connector.

19. Remove cap on static line (7) and connect to standby airspeed indicator (8) under left side of instrument panel.

20. Install pitot-static tester line (high pressure) on pitot tube (20).

21. Apply pressure until airspeed indication (21) on MFD (15) reaches 140 knots. Close pressure line shut-off valve; wait one minute, and verify that leakage does not exceed indicated drop of 10 knots.


7
8
INSTRUMENT PANEL (REFERENCE)
20
15
21
300
330
N
030
060
E
140
1000
VSD
HSD
C1
A1
MMS
COMM

406075-421A

GO TO NEXT PAGE

8-3-1 OPERATIONAL CHECK — PITOT-STATIC AND AIR DATA SYSTEM (CONT)

22. On standby airspeed indicator (8) verify that 140 (±5 knots) (22) is indicated when applied pressure is 140 knots.

23. On forward overhead console (1), set PREHEAT/OFF/BATT 1 switch (13) to OFF.

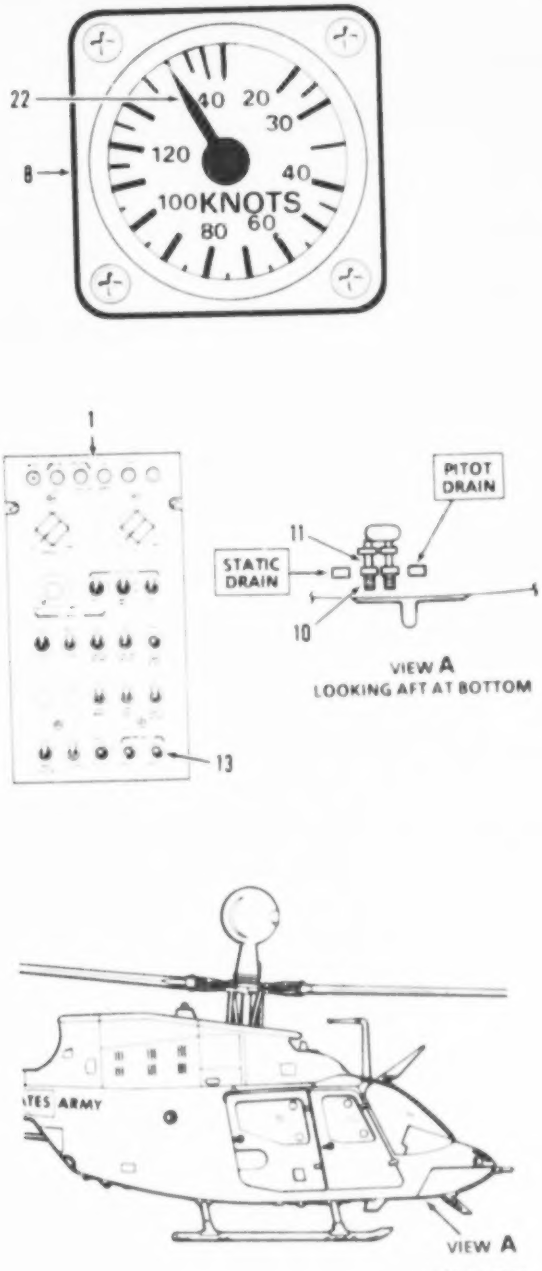
24. Remove 28 VDC external power (Task 9-3-11).

25. Remove pitot-static tester, and work aid H-205 from static drain line connector nut (11).

26. Install plug (10) to static drain line connector nut (11).

FOLLOW-ON MAINTENANCE

Install MPD (Task 8-1-5).


22
8
140
20
30
120
40
100
KNOTS
80
60
1
13
PITOT DRAIN
11
STATIC DRAIN
10
VIEW A
LOOKING AFT AT BOTTOM
TES ARMY
VIEW A

406075-475A

END OF TASK

8-3-2. CLEAN, INSPECT, AND REPAIR PITOT-STATIC TUBING AND FITTINGS

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Drycleaning Solvent (D1)
Wiping Rags (D53)
Rubber Gloves (D119)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

Equipment Condition:

Searchlight Operational Check
(Task 9-1-26)

General Safety Instructions:

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

CAUTION

All pitot and static lines shall be free of water traps.

GO TO NEXT PAGE

8-3-2. CLEAN, INSPECT, AND REPAIR PITOT-STATIC TUBING AND FITTINGS (CONT)

CLEAN

1. Clean area by each static port (left and right surface of helicopter) using solvent (D1) and damp wiping rag (D53).

2. Clean pitot tube surface using solvent (D1) and damp wiping rag (D53).

3. Dry each area cleaned with wiping rag (D53).

INSPECT

4. Inspect for loose or broken pitot pressure and static lines.

5. Inspect for cracked or broken nuts and fittings.

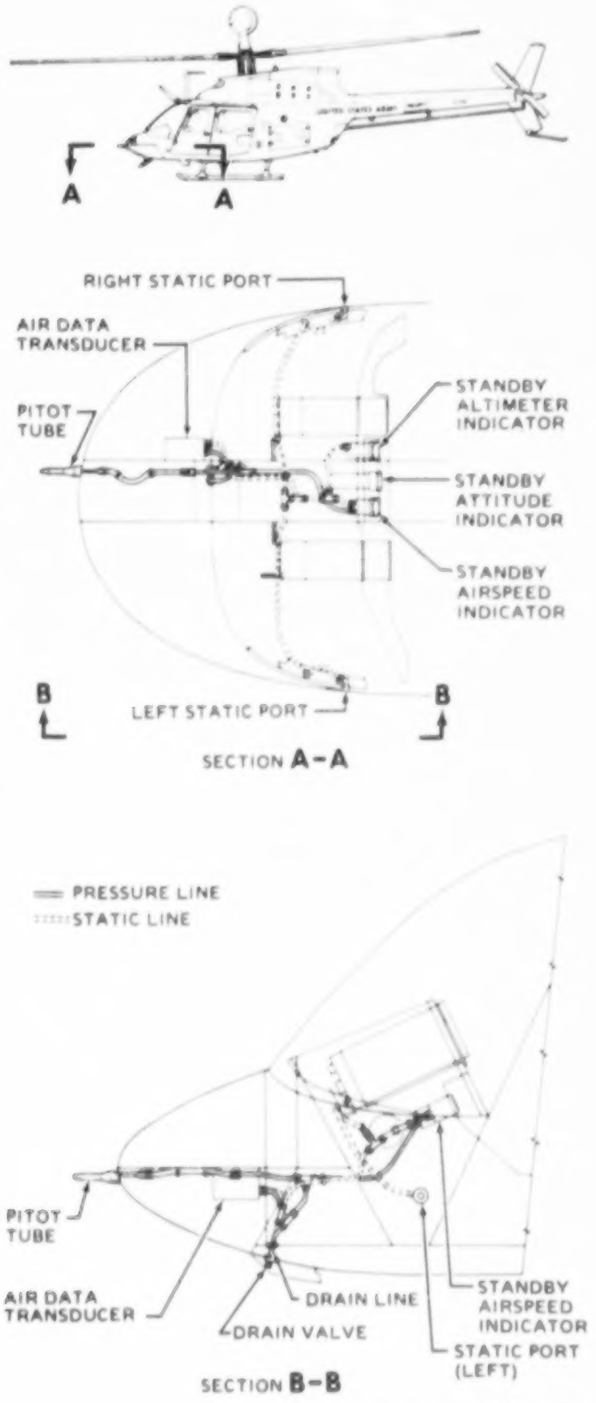
6. Inspect for missing drain plugs.

REPAIR

(Refer to Tasks 8-3-8 and 8-3-9).

FOLLOW-ON MAINTENANCE

Perform pitot-static and air data system operational check (Task 8-3-1) as required.


A
A
RIGHT STATIC PORT
AIR DATA TRANSDUCER
PITOT TUBE
STANDBY ALTIMETER INDICATOR
STANDBY ATTITUDE INDICATOR
STANDBY AIRSPEED INDICATOR
B
B
LEFT STATIC PORT
═ PRESSURE LINE
┅ STATIC LINE
PITOT TUBE
AIR DATA TRANSDUCER
DRAIN LINE
DRAIN VALVE
STANDBY AIRSPEED INDICATOR
STATIC PORT (LEFT)

SECTION A–A

SECTION B–B

406961-2378

END OF TASK

8-3-3. REMOVE/INSTALL BULB P/N 56B3C (FOR AIR DATA SYSTEM)

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configuration:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

GO TO NEXT PAGE

8-3-3 REMOVE/INSTALL BULB P/N 56B3C (FOR AIR DATA SYSTEM) (CONT)

REMOVE

1 Remove nut (1) and washer (2)

2 Remove eight screws (3) from cover (4) and remove cover

3 Disconnect electrical connector (5) and remove bulb (6)

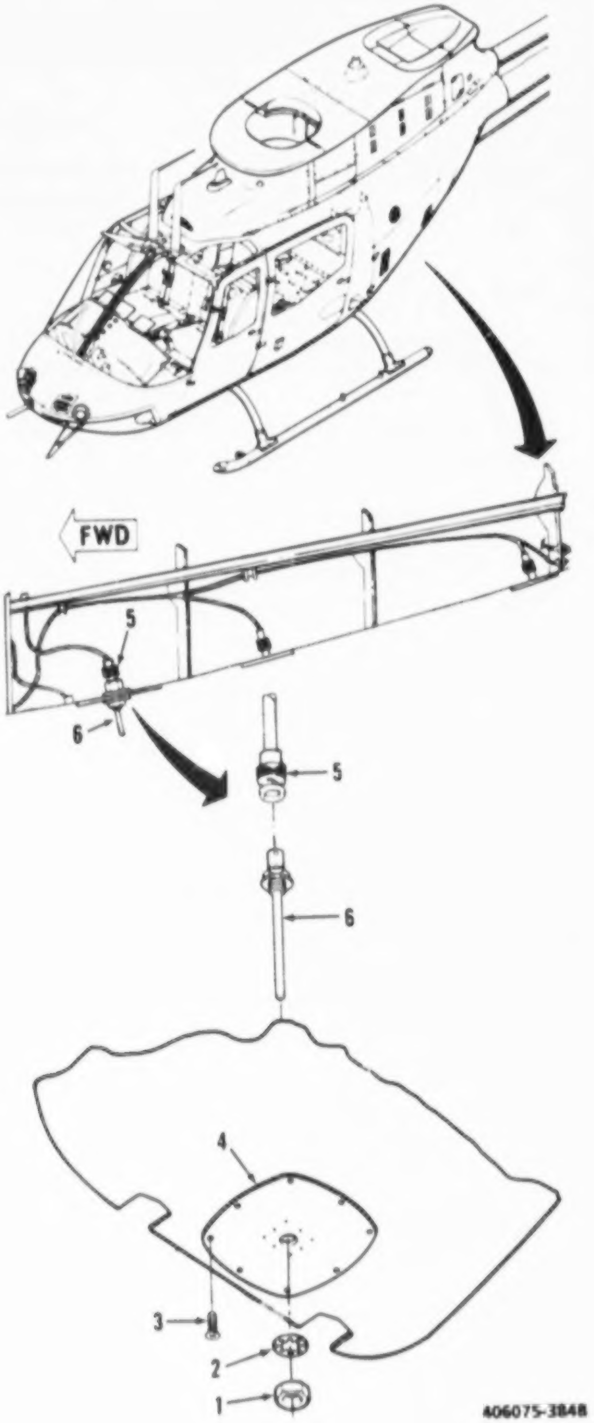
INSTALL

4 Connect electrical connector (5) to bulb (6)

5 Insert bulb (6) through hole in cover (4) Secure bulb (6) using nut (1) and washer (2)

6 Install cover (4) using eight screws (3)

INSPECT



406075-3848

END OF TASK

8-3-4. REMOVE AIR DATA TRANSDUCER

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

1. Gain access to air data transducer (1) through pilot door.

2. Disconnect electrical connector (2).

3. Disconnect static line connector (3) from PS (static) bushing (4).

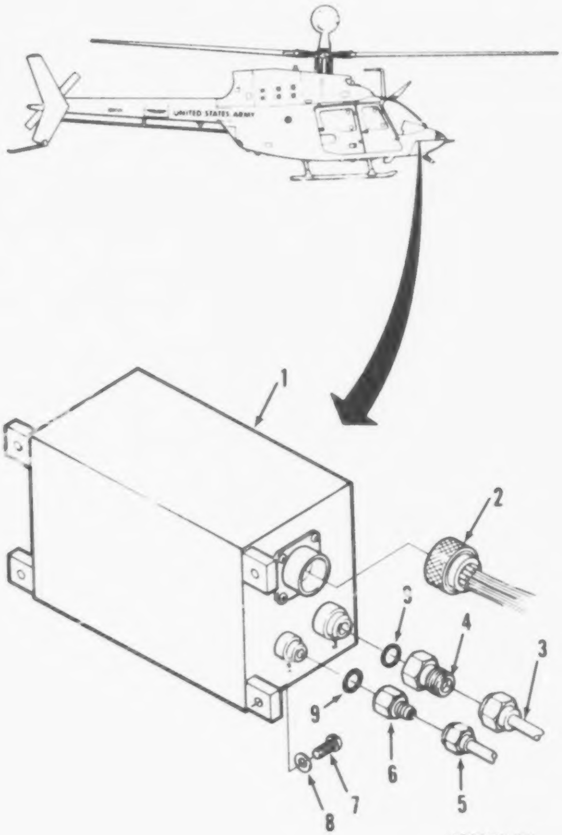
4. Disconnect pitot line connector (5) from PT (pitot) adapter (6).

5. Remove four screws (7) and four washers (8).

6. Remove air data transducer (1) through pilot door.

7. Remove bushing (4) from PS (static) fitting and discard packing (9).

8. Remove adapter (6) from PT (pitot) fitting and discard packing (9).



406077-28

END OF TASK

8-3-5 CLEAN, INSPECT, AND REPAIR AIR DATA TRANSDUCER

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Drycleaning Solvent (D1)
Sandpaper, 400 Grit (D11)
Polyamide Epoxy Primer (D13)
Wiping Rags (D53)
Rubber Gloves (D119)

Personnel Required

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

CLEAN

WARNING

> Drycleaning solvent (D1), and epoxy polyamide primer (D13) are flammable and toxic. They can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean outer surface of air data transducer (1) using solvent (D1) and wiping rag (D53). Dry with wiping rag (D53).

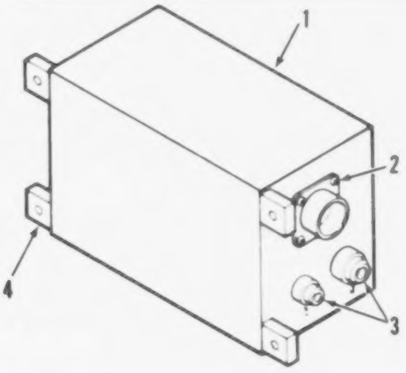
INSPECT

2. Inspect outer surface of air data transducer (1) for scratches and abrasions.

3. Inspect electrical connector (2) for security of attachment to unit. Inspect contact pins of electrical connector (2) for bent, corroded, or damaged pins.

4. Inspect fittings (3) for obstructions and for loose attachment to transducer (1) and damaged threads.

5. Inspect attachment points (4) for loose, bent, or other damage. Replace unit if cracked, bent or loose.



406077-6

6. Inspect outer surface (1) for dents or cracks. If a dent extends into the surface more than 0.1 inch, or cracks extend through the outer surface, replace unit.

7. Polish out scratches and abrasions on surface of transducer (1) with 400 grit sandpaper (D11).

8. Apply one coat of primer (D13) to repaired areas which were previously painted. Do not paint or primer bottom surface of attachment points (4) or connector (2).

9. If threads on fittings (3) are damaged, replace transducer (1).

10. Repair or replace damaged electrical connector (2).

INSPECT

END OF TASK

8-3-6. INSTALL AIR DATA TRANSDUCER

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
APU

Parts:

Packing

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

Equipment Condition:

Electrical Power Off (Task 9-3-11)
Battery Disconnected (Task 9-3-9)

1. Install new packings (1) and install bushing (2) in PS (static) and adapter (3) in PT (pitot) fittings on air data transducer (4).

2. Gain access to air data transducer mounting holes through pilot door.

3. Place air data transducer (4) through pilot door and align with mounting holes.

4. Install four screws (5) and four washers (6).

5. Connect pitot line connector (7) to PT (pitot) fitting adapter (3).

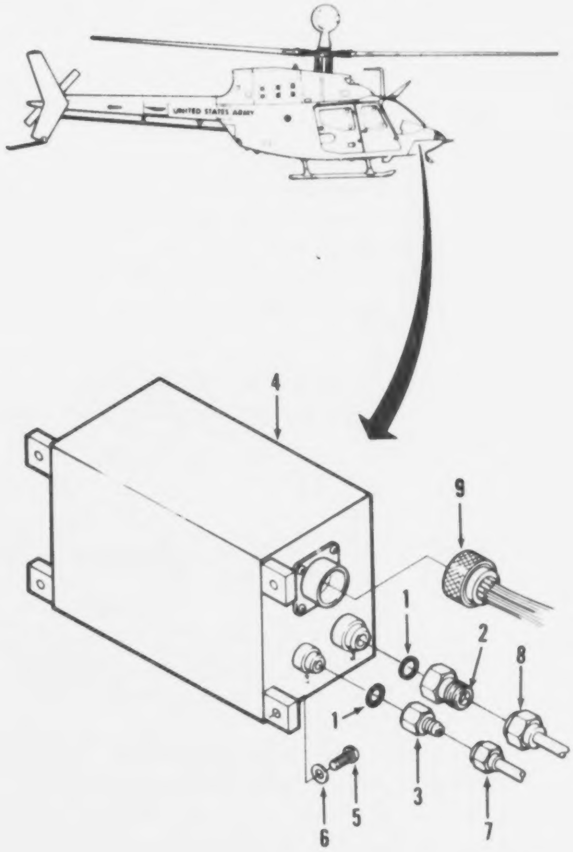
6. Connect static line connector (8) to PS (static) fitting bushing (2).

7. Connect electrical connector (9).

INSPECT

FOLLOW-ON MAINTENANCE

Perform pitot static and air data system operational check (Task 8-3-1).



406077-48

END OF TASK

8-3-7 REMOVE/INSTALL AIR DATA POWER SUPPLY

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

REMOVE

1 Open right crew door to gain access to air data power supply (1).

2 Disconnect electrical connector (2).

NOTE

Access to the two aft screws is through holes in cover.

3 Support air data power supply (1) and remove four screws (3) and washers (4).

4 Remove air data power supply (1) from bracket (5).

INSTALL

5 Position air data power supply (1) on bracket (5).

6 Install four screws (3) and washers (4).

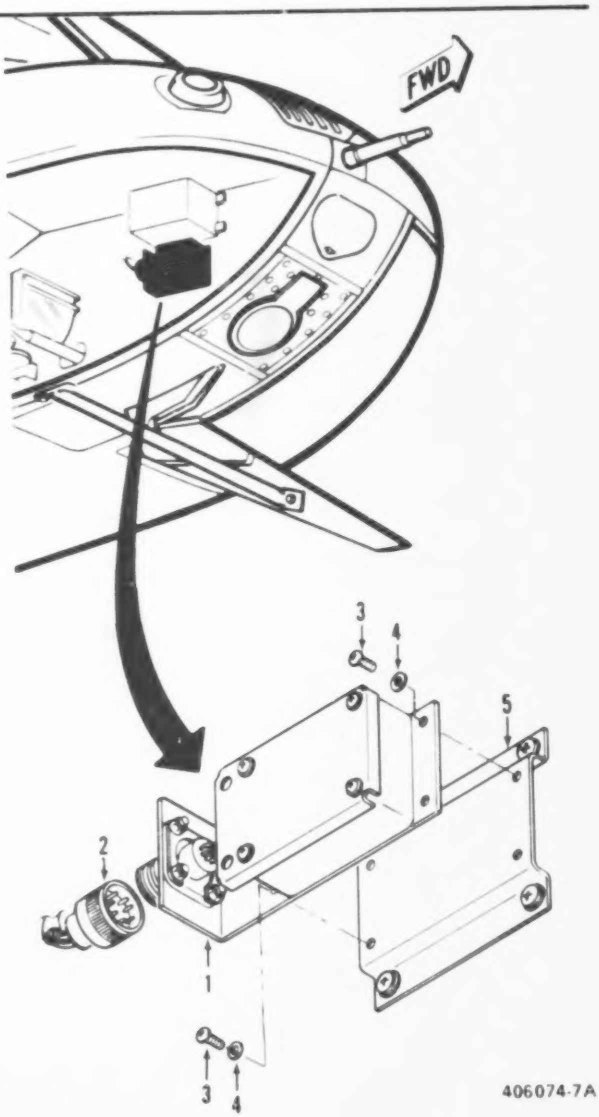
7 Connect electrical connector (2).

INSPECT

FOLLOW-ON MAINTENANCE

Perform pitot static and air data system operational check (Task 8-3-1).

END OF TASK



406074-7A

8-3-8 REMOVE PITOT - STATIC TUBING AND FITTINGS

This task covers: Removal (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician

NOTE

It is unlikely that all pitot and static lines will require maintenance at the same time. Therefore, this task is arranged such that each paragraph may be used as a subtask. Use only the paragraph(s) required.

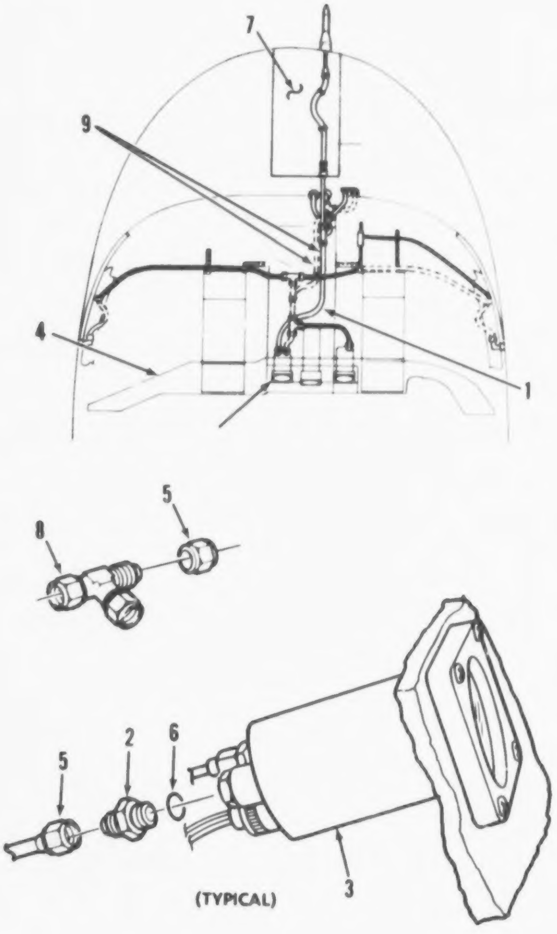
1. Remove PITOT pressure tube (1) as follows:

a. Gain access to PITOT pressure tube (1) union assembly (2) on airspeed indicator (3) from under the left side of instrument panel (4).

b. Remove connector nut (5), and packing (6) from airspeed indicator (3) union assembly fitting (2).

c. Gain access to forward end of PITOT pressure tube (1) through door (7).

d. Remove connector nut (5) from union tee assembly (8), cut two straps (9), slide PITOT pressure tube (1) forward, and remove PITOT pressure tube (1) from helicopter.



406961-2398

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8-3-8 REMOVE PITOT - STATIC TUBING AND FITTINGS (CONT)

2. Remove PITOT pressure tube (10) and adapter (11) as follows:

a. Gain access to PITOT pressure tube (10) through door (7).

b. Remove connector nut (5) from forward end of union tee assembly (12).

c. Perform extend portion of searchlight operational check (Task 9-1-26).

d. Remove connector nut (5) from aft end of PITOT pressure hose (13) and adapter (11). Slide PITOT pressure tube (10) forward, and remove from helicopter.

3. Remove PITOT pressure hose (13) as follows:

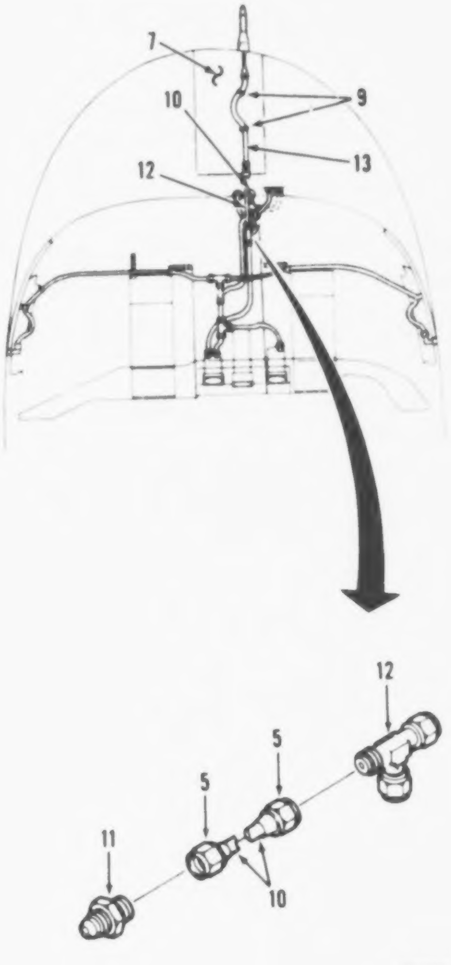
a. Gain access to PITOT pressure hose (13) by extending searchlight (Task 9-1-26).

b. Remove forward end of PITOT pressure hose (13) (step 2.d.)

NOTE

Adapter (11) shall be removed and retained for use on replacement hose (13).

c. Remove hose connector nut (5) from PITOT pressure tube (10), cut two straps (9), and remove PITOT pressure hose (13) from helicopter.



406961-533C

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8-3-8. REMOVE PITOT - STATIC TUBING AND FITTINGS (CONT)

4. Remove STATIC tubes (14, 15, 16, 17, 18 and 19) as follows:

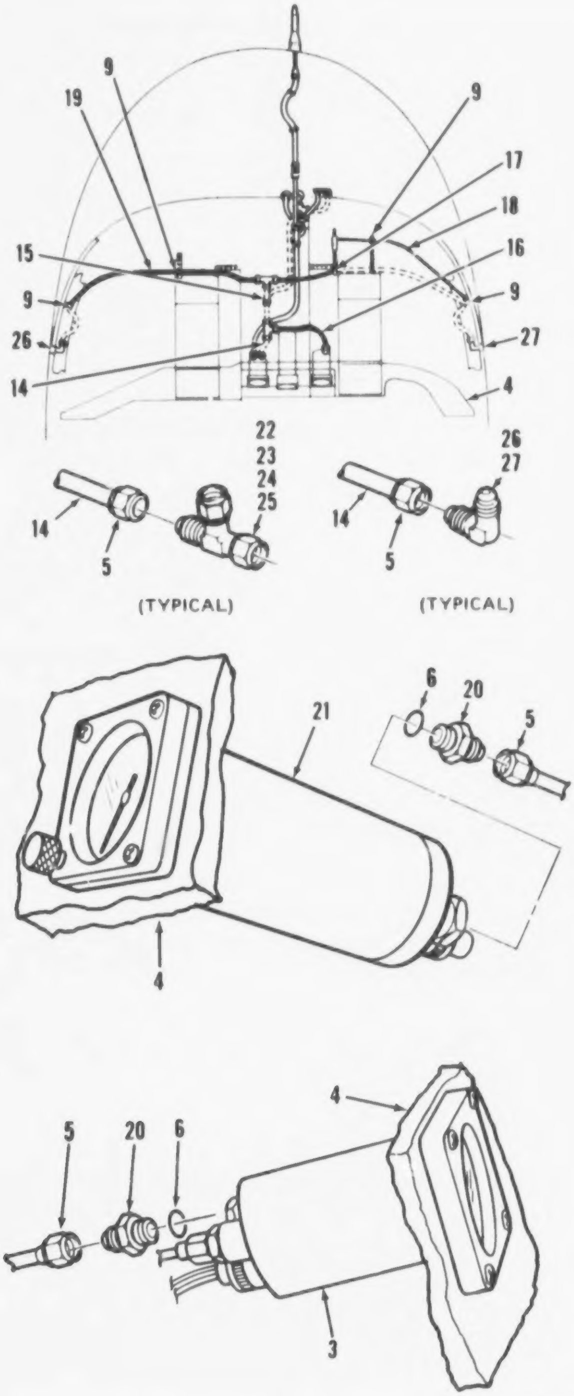
a. Gain access to STATIC tubes (14, 15, 16, 17, 18 and 19) and reducer (20) behind the altimeter (21) right side of instrument panel (4) or airspeed indicator (3) under left side of instrument panel (4).

b. Disconnect PITOT pressure tube (1) (step 1) from airspeed indicator (3).

c. Remove connector nuts (5) from altimeter (21) and airspeed indicator (3).

d. Remove reducer (20) and packing (6) and cut four straps (9).

e. Remove connector nuts from union tee assemblies (22, 23, 24 and 25) and elbows (26 and 27), remove from helicopter.


19
9
9
17
18
15
16
9
9
26
27
14
4
22
23
24
25
14
5
(TYPICAL)
26
27
14
5
(TYPICAL)
6
20
21
5
4
4
5
20
6
3

406961-532C

GO TO NEXT PAGE

8-3-8 REMOVE PITOT - STATIC TUBING AND FITTINGS (CONT)

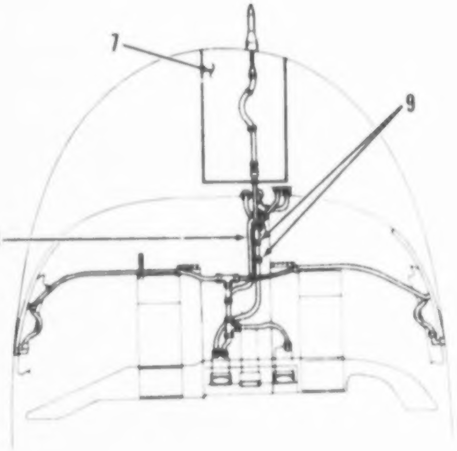
5. Remove STATIC tubes (28 and 29) as follows:

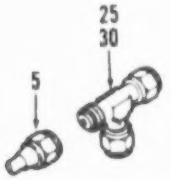
a. Gain access to STATIC tubes union tee assemblies (25 and 30) from under console.

b. Remove connector nuts (5) from union tee assemblies (25 and 30).

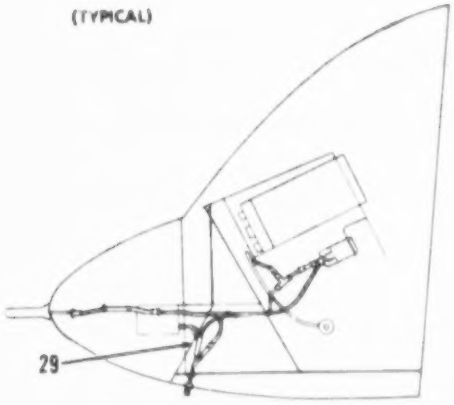
c. Gain access to forward end of STATIC tubes (28 and 29) through door (7).

d. Cut two straps (9) and slide STATIC tubes (28 and 29) forward through door (7) and remove from helicopter.





(TYPICAL)



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406961-241C

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8-3-8 REMOVE PITOT - STATIC TUBING AND FITTINGS (CONT)

6. Remove PITOT pressure tube (31) and STATIC tube (32) as follows:

a. Gain access to PITOT pressure tube (31) and STATIC tube (32) through pilot door and access panel on right side of console.

b. Remove connector nuts (5) from air data transducer (34), adapter (33), union assembly (2), and packing (6).

c. Remove connector nut (5) from union tee assemblies (35 and 36) and remove both the PITOT pressure tube (31) and STATIC tube (32) from helicopter.

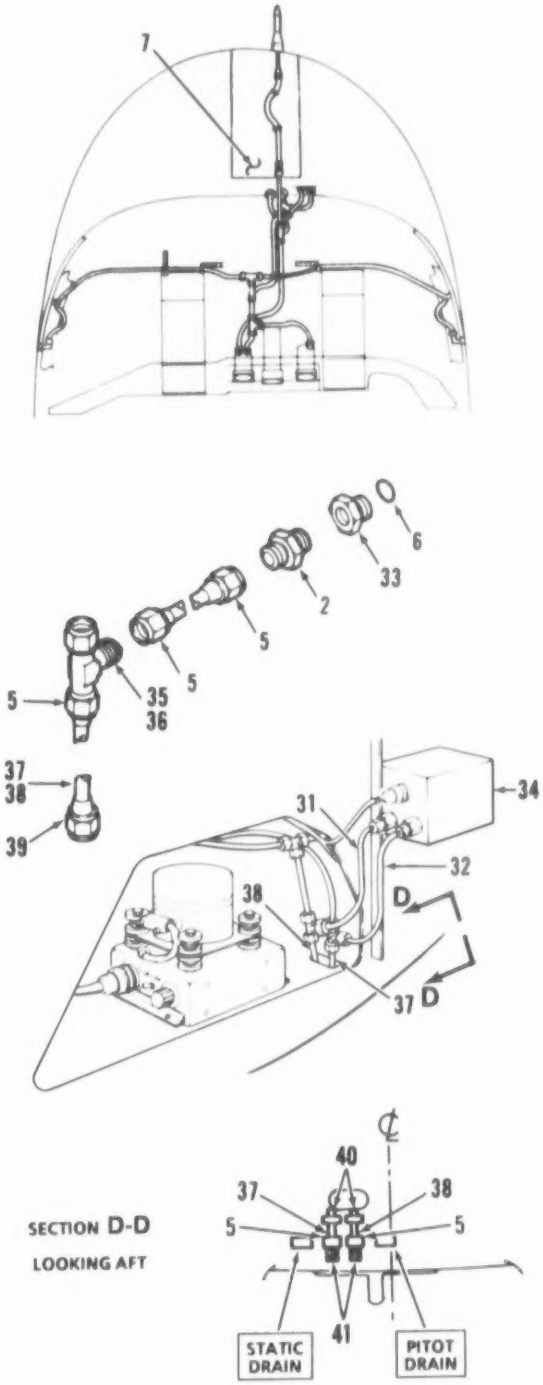
7. Remove STATIC DRAIN tube (37) and PITOT DRAIN tube (38) as follows:

a. Gain access to STATIC DRAIN tube (37) and PITOT DRAIN tube (38) through access panel on right side of console.

b. Remove connector nut(s) (5) from union tee assemblies (35 and 36) and remove inserts and adapter (39) from STATIC DRAIN tube (37) and PITOT DRAIN tube (38).

c. Pull STATIC DRAIN tube (37) and PITOT DRAIN tube (38) until both clear grommets (40).

d. Remove plugs (41) from connector nuts (5).



406961-534C

END OF TASK

8-3-9 INSTALL PITOT - STATIC TUBING AND FITTINGS

This task covers: Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
Electric Heater Gun

Parts:

Plug
Insert
Elbow
Hose Assembly
Nut and Sleeve
Tubing
Union — Tee Assembly

Materials:

Strap (D138)
Tape (PITOT) (D129)
Tape (STATIC) (D130)
Tape (INSTRUMENT AIR) (D128)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

General Safety Instructions

CAUTION

All pressure or static lines, shall be installed free of water traps.

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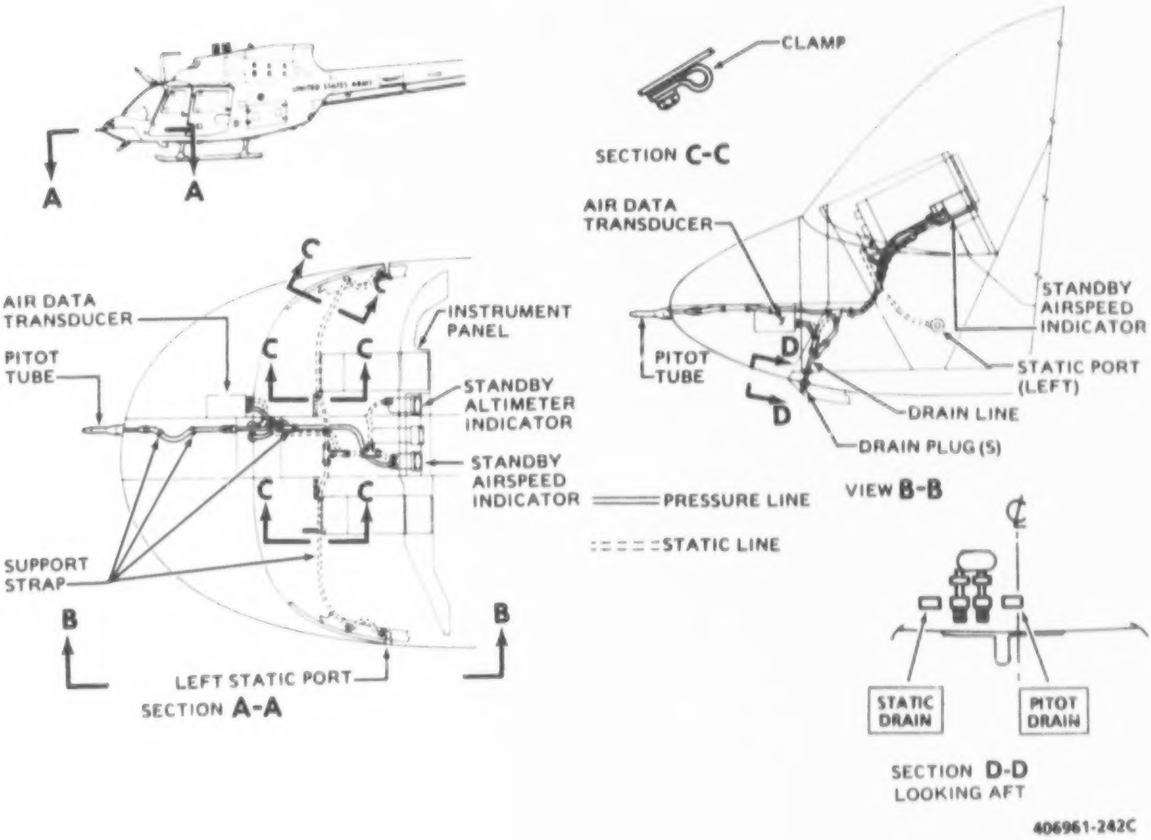
8-3-9 INSTALL PITOT - STATIC TUBING AND FITTINGS (CONT)


A
A
CLAMP
SECTION C-C
AIR DATA TRANSDUCER
PITOT TUBE
STANDBY AIRSPEED INDICATOR
STATIC PORT (LEFT)
D
D
DRAIN LINE
DRAIN PLUG(S)
VIEW B-B
C
C
C
C
C
C
AIR DATA TRANSDUCER
PITOT TUBE
INSTRUMENT PANEL
STANDBY ALTIMETER INDICATOR
STANDBY AIRSPEED INDICATOR
PRESSURE LINE
STATIC LINE
SUPPORT STRAP
B
B
LEFT STATIC PORT
SECTION A-A
℄
STATIC DRAIN
PITOT DRAIN
SECTION D-D LOOKING AFT
406961-242C

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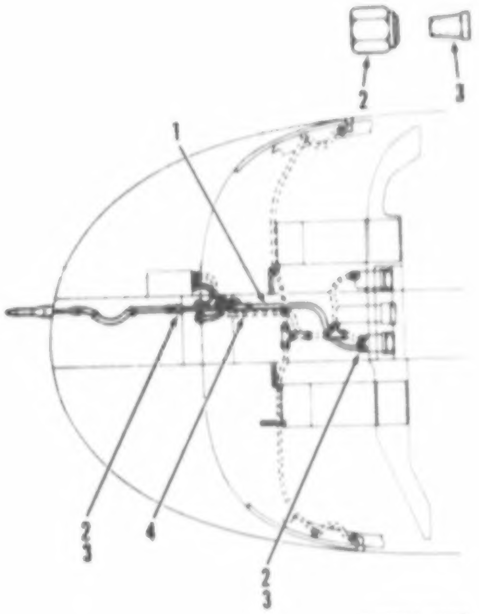
8-3-9 INSTALL PITOT - STATIC TUBING AND FITTINGS (CONT)



406961-243C

NOTE

It is unlikely that all pitot and static lines will require maintenance at the same time. Therefore, this task is arranged such that each paragraph may be used as a subtask. Use only the paragraph(s) required. Then perform follow-on maintenance.

1. Install PITOT pressure tube (1) as follows:

a. Cut new tubing to exact length and form (using heat gun) to same shape as tubing removed.

b. Install two nut and sleeve assemblies (2), back to back, and install two inserts (3) behind nut and sleeve assemblies.

c. Gain access to forward console structural panel opening and feed line through console to connector (P) on airspeed indicator.

d. Connect nut to "T" fitting then install tape (INSTRUMENT AIR (D128) and PITOT (D129)) for identification.

e. Install two support straps (D127) to the parallel portion of static tube (4).

f. Install forward console structural panel.

g. Gain access to airspeed indicator adapter (P) connector from under left side of instrument panel, connect nut, and install tape (INSTRUMENT AIR (D128) and PITOT (D129)) for identification.

GO TO NEXT PAGE

8-3-9. INSTALL PITOT - STATIC TUBING AND FITTINGS (CONT)

2. Install PITOT pressure tube (5) as follows:

a. Cut new tubing to exact length and form (using heat gun) to same shape as tubing removed.

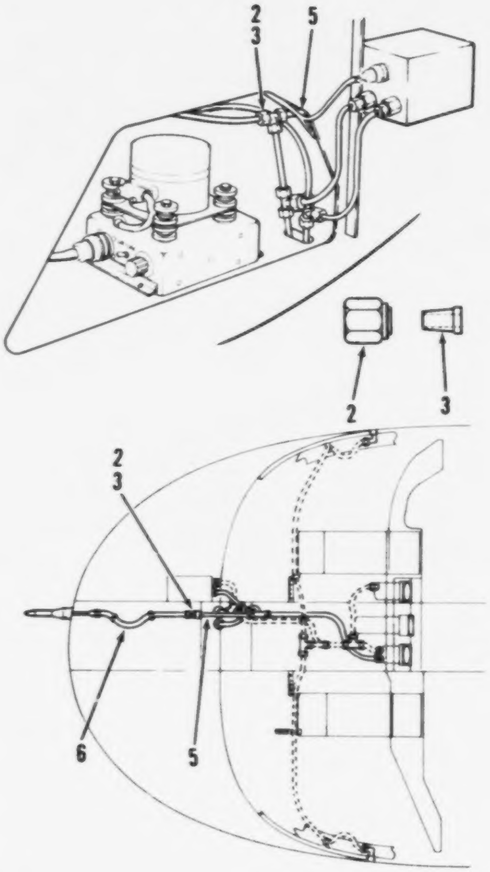
b. Install two nut and sleeve assemblies (2), back to back, and install two inserts (3) behind nut and sleeve assemblies (2).

c. Gain access to forward console structural panel opening and feed line forward to the PITOT pressure hose.

d. Connect nut to "T" fitting and install forward console structural panel.

e. Gain access to PITOT pressure hose (6) by extending searchlight (Task 9-1-26) and connect line nut to aft end of PITOT pressure hose adapter.

f. Install tape (INSTRUMENT AIR (D128) and PITOT (D129)) for identification and perform retract portion of searchlight operational check (Task 9-1-26).



406961-536C

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8-3-9. INSTALL PITOT - STATIC TUBING AND FITTINGS (CONT)

3. Install static line(s) (7), (8), (9) and (10) as follows:

a. Cut new tubing to exact length and form (using heat gun) to same shape as tubing removed.

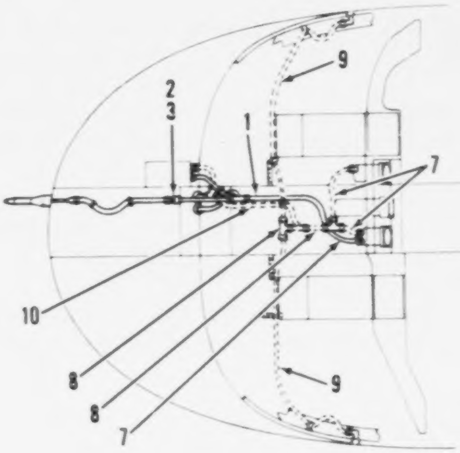
b. Install two nut and sleeve assemblies (2), back to back, and install two inserts (3) behind nut and sleeve assemblies (2).

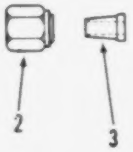
c. Install tape (INSTRUMENT AIR (D128) and STATIC (D130)) for identification.

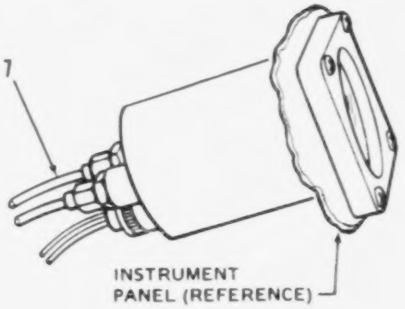
d. Gain access under instrument panel to appropriate instrument and connect nut to reducer (fitting(s) on airspeed indicator) on instrument(s).

e. Gain access to "T" fitting from under instrument panel and connect nut(s) to "T" fitting.

f. Connect PITOT pressure tube (1) (step 1) to airspeed indicator (fitting (P) union).







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8-3-9. INSTALL PITOT - STATIC TUBING AND FITTINGS (CONT)

4. Install PITOT pressure hose (6) (with adapter) as follows:

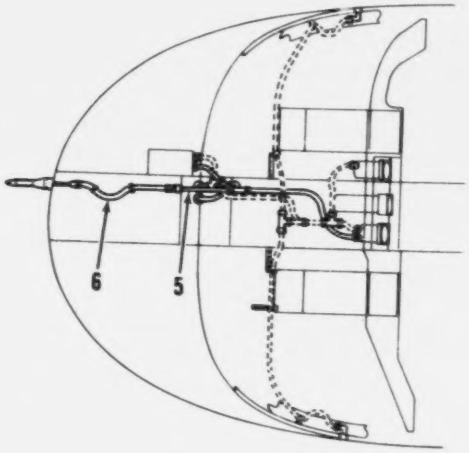
a. Gain access to PITOT line and pitot tube. Perform extend portion of searchlight operational check (Task 9-1-26).

b. Install tape (INSTRUMENT AIR (D128) and PITOT (D129)) on new hose for identification.

c. Connect PITOT hose (adapter end) to forward end of PITOT pressure tube (5) and other end to pitot tube.

d. Install two support straps (D127) such that all hose slack is concentrated between straps.

e. Perform retract portion of searchlight operational check (Task 9-1-26).



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8-3-9. INSTALL PITOT - STATIC TUBING AND FITTINGS (CONT)

5. Install static tube (10) and PITOT pressure tube (11) as follows:

a. Cut new tubing to exact length and form (using heat gun) to same shape as tubing removed.

b. Install two nut and sleeve assemblies (2), back to back, and install two inserts (3) behind nut and sleeve assemblies (2).

c. Install tape (INSTRUMENT AIR (D128) and STATIC (D130) or INSTRUMENT AIR (D128) and PITOT (D129) for identification.

d. Gain access to "T" fitting(s) through forward console structural panel opening and connect nut(s) to appropriate "T" fitting(s).

e. Connect other nut(s) to appropriate air data transducer (fitting PT adapter for PITOT and fitting PS bushing for STATIC) connector(s).

f. Install forward console structural panel.

6. Install pitot drain tube (12) or static drain tube (13) as follows:

a. Cut new tubing to exact length and form (using heat gun) to same shape as tubing removed.

b. Install lower nut(s), sleeve(s), inserts(s), and drain plug(s).

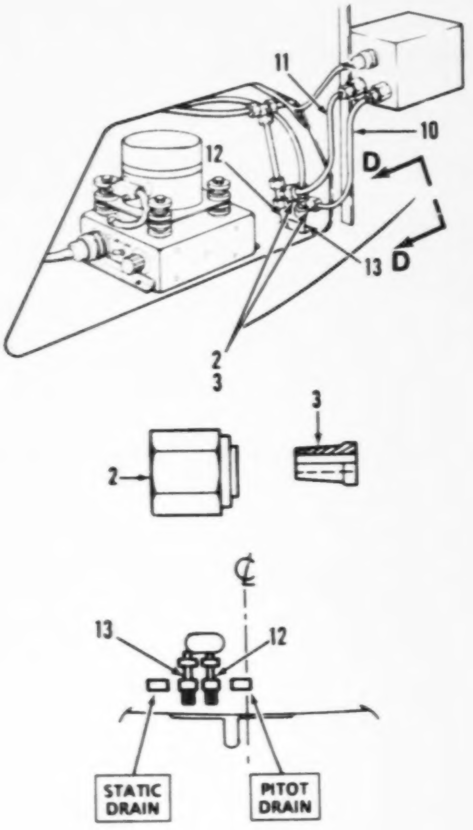
c. Feed tube(s) upward through appropriate grommets (two per line) to appropriate "T" fitting(s).

d. Gain access to appropriate "T" fitting(s) through forward console structural panel opening.

e. Install upper nut(s), sleeve(s), and insert(s), then connect nut(s) to appropriate "T" fitting(s).

f. Install tape (INSTRUMENT AIR (D128) and STATIC (D130) or INSTRUMENT AIR (D128) and PITOT (D129)) for identification.

g. Install forward console structural panel.



SECTION **D-D**
LOOKING AFT

406075-424A

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-3-1).

Perform inspection (Task 8-3-2).

END OF TASK

8-3-10. OPERATIONAL CHECK — PITOT TUBE HEATER

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Personnel Required:

68F Aircraft Electrician

Equipment Condition:

Battery Connected (Task 9-3-9)
Electrical Power On (Task 9-3-10)

General Safety Instructions:

WARNING

The pitot tube assembly is very hot during and immediately after operations requiring pitot heat. Keep hands and other parts of body away from this area. If burn occurs, seek medical aid.

GO TO NEXT PAGE

8-3-10. OPERATIONAL CHECK—PITOT TUBE HEATER (CONT)

1. Gain access to aft overhead console (1) through either crew door.

2. Close PITOT HTR circuit breaker (2).

3. On forward overhead console (3), set PREHEAT/OFF/BATT 1 switch (4) to BATT 1.

4. Set OFF/PITOT HTR switch (5) to PITOT HTR.

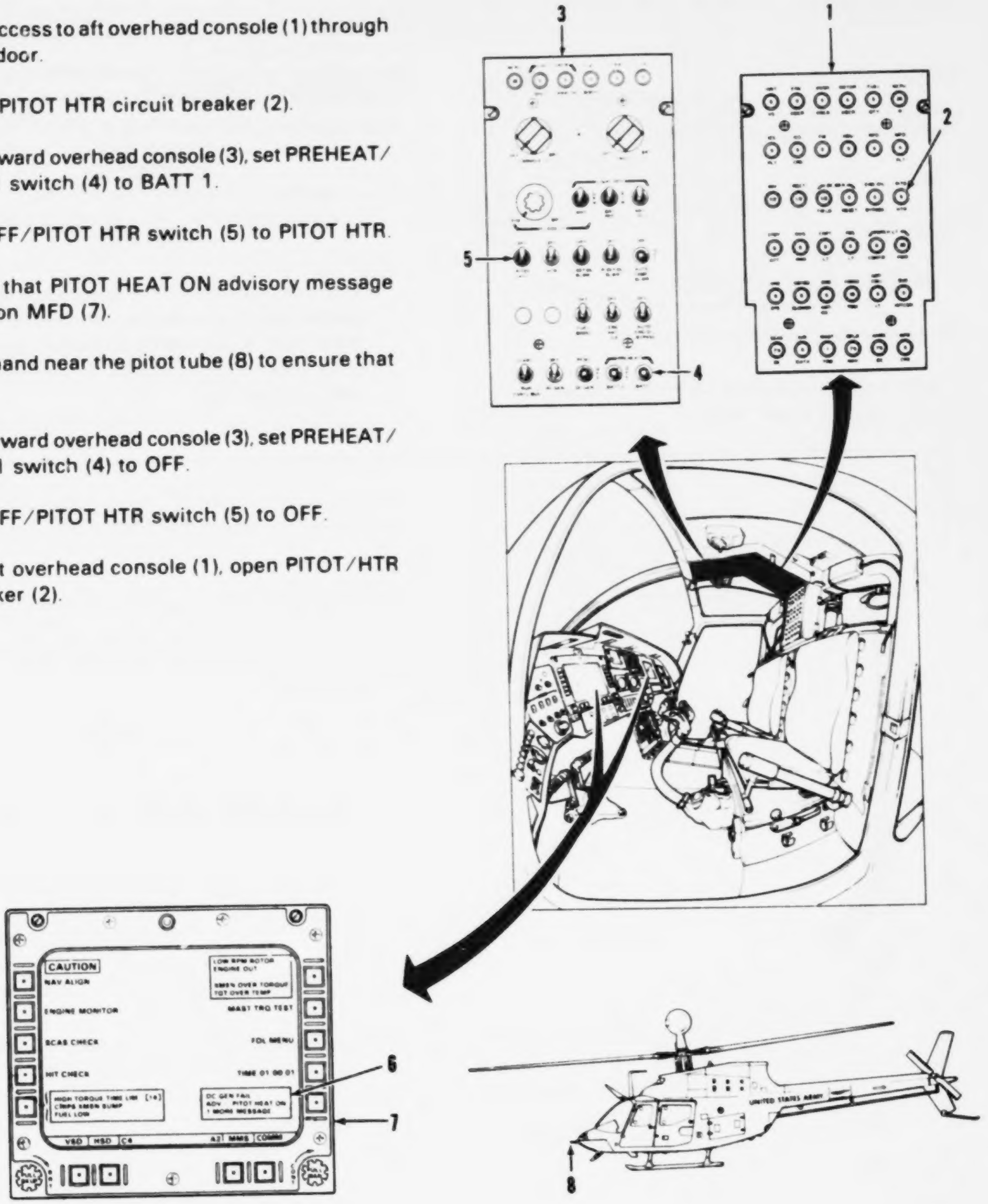
5. Verify that PITOT HEAT ON advisory message (6) appears on MFD (7).

6. Hold hand near the pitot tube (8) to ensure that it gets hot.

7. On forward overhead console (3), set PREHEAT/OFF/BATT 1 switch (4) to OFF.

8. Set OFF/PITOT HTR switch (5) to OFF.

9. On aft overhead console (1), open PITOT/HTR circuit breaker (2).


3
1
2
5
4
CAUTION
NAV ALIGN
ENGINE MONITOR
SCAS CHECK
HIT CHECK
LOW RPM ROTOR
ENGINE OUT
MAST TRQ TEST
FDL MENU
TIME 01 00 01
HIGH TORQUE TIME LIM [16]
FUEL LOW
DC GEN FAIL
ADV PITOT HEAT ON
1 MORE MESSAGE
VSD
HSD
MMS
COMM
UNITED STATES ARMY
6
7
8

406075-147C

END OF TASK

8-3-11. REMOVE/INSTALL PITOT TUBE

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

General Safety Instructions:

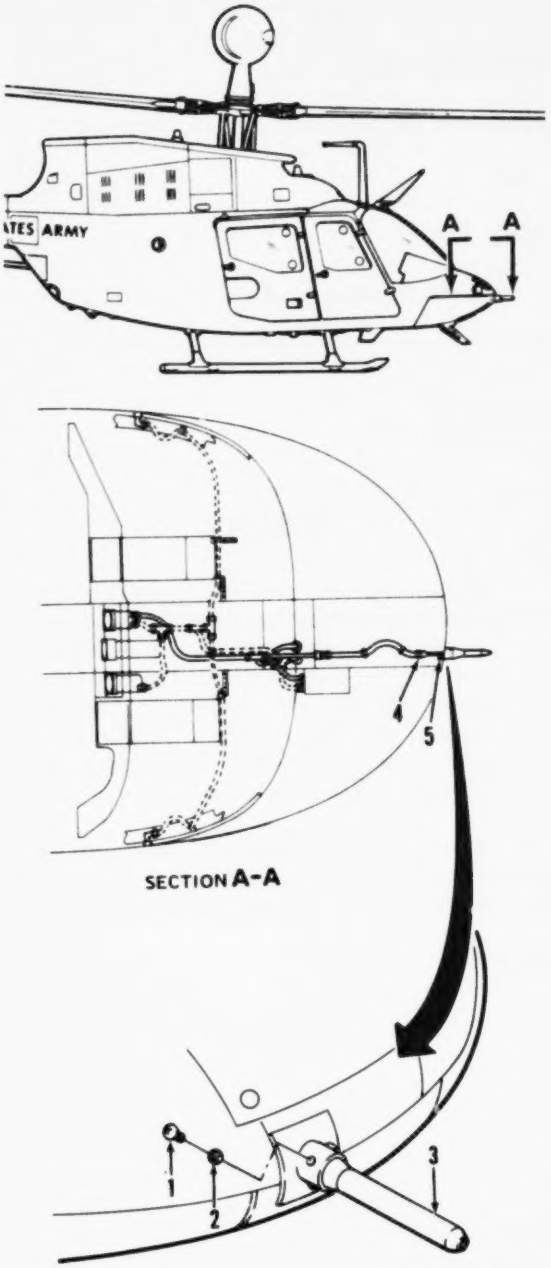
WARNING

PITOT HEAT

The pitot tube assembly is very hot during and immediately after operations requiring pitot heat. Keep hands and other parts of body away from this area. If burn occurs, seek medical aid.

GO TO NEXT PAGE

8-3-11. REMOVE/INSTALL PITOT TUBE (CONT)



406961-248C

REMOVE

1. Remove three screws (1) and three washers (2) while holding pitot-tube (3) in its mount. Then pull out slowly on pitot tube and disconnect pressure hose connector (4).

2. Remove pitot-heater wiring quick-disconnects (5) and remove pitot-tube (3) from helicopter.

INSTALL

CAUTION

Ensure that the word "TOP" on pitot tube, is facing upward.

3. Connect pitot-tube heater wiring quick-disconnects (5) and pitot-tube pressure hose connector (4).

4. Position pitot-tube (3) in its mounting position.

5. Install three screws (1) and three washers (2).

CAUTION

All pressure lines shall be free of water traps.

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-3-10).

Perform pitot-static and air data system operational check (Task 8-3-1).

END OF TASK

8-3-12. CLEAN, INSPECT, AND REPAIR PITOT TUBE

This task covers: Cleaning, Inspection, and Repair (Off Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Drycleaning Solvent (D1)
Cloth, Low-Lint (D56)
Rubber Gloves (D119)

Personnel Required:

68F Aircraft Electrician

CLEAN

WARNING

> Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear rubber gloves (D119) and goggles. In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean pitot tube head and sleeve with a clean, low-lint cloth (D56) dampened with cleaning solvent (D1). Dry with clean, low-lint cloth (D56).

INSPECT

2. Inspect surface of pitot tube for clogged or obstructed opening and clogged drain hole at bottom of tube.

3. Inspect electrical receptacle, pins and sockets of pitot tube for damage.

REPAIR

4. Replace pitot tube head if inlet opening is clogged or obstructed, drain hole is clogged, or electrical connector is damaged.

5. Replace pitot tube head if cracked or damaged to the extent it would restrict impact air pressure.

6. Replace defective or damaged pitot electrical connector.

7. Tighten or properly install fittings.

END OF TASK

Section IV. NAVIGATION INSTRUMENTS

This helicopter does not contain navigation instruments. All navigation functions are integrated into the Control Display Systems (CDS). Refer to Section V for miscellaneous instruments, or refer to TM 9-1427-779-20 for CDS.

Section V. MISCELLANEOUS INSTRUMENTS

This section includes maintenance procedures for operational check, troubleshooting, inspection, installation, removal, cleaning, and follow-on maintenance of the miscellaneous instruments.

LIST OF TASKS

TASK	TASK NUMBER	PAGE NUMBER
Operational Check — Standby Compass	8-5-1	8-89
Clean, Inspect, and Repair Standby Compass	8-5-2	8-92
Remove/Install Standby Compass	8-5-3	8-94
Operational Check — Clock	8-5-4	8-95
Clean, Inspect, and Repair Clock	8-5-5	8-98
Remove/Install Clock	8-5-6	8-100
Clean, Inspect, and Remove/Install Outside Air Thermometer	8-5-7	8-101

8-5-1. OPERATIONAL CHECK — STANDBY COMPASS

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

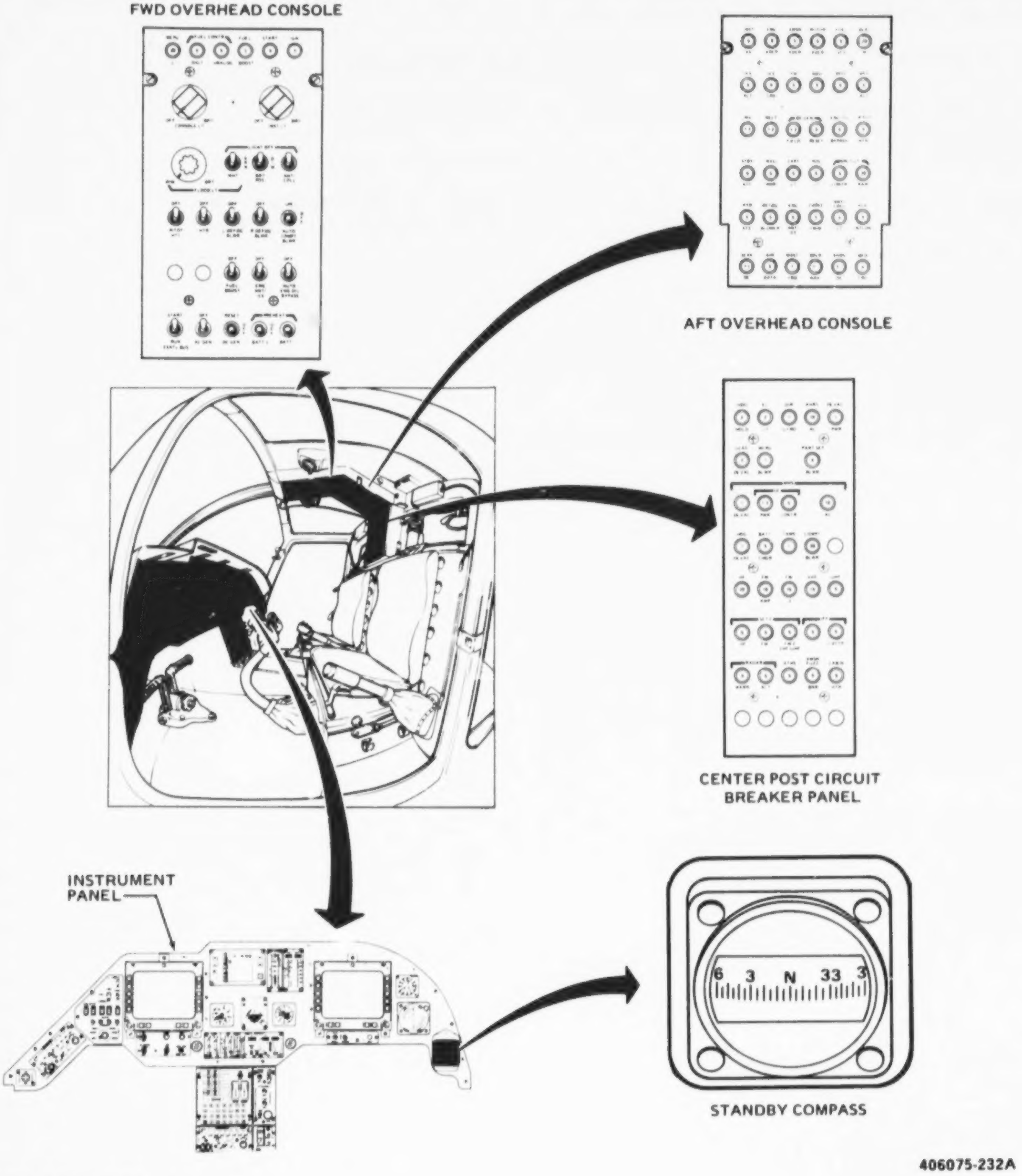
68F Aircraft Electrician

Equipment Condition:

Battery Connected (Task 9-3-9)
Electrical Power On (Task 9-3-10)

GO TO NEXT PAGE

8-5-1. OPERATIONAL CHECK — STANDBY COMPASS (CONT)


FWD OVERHEAD CONSOLE
AFT OVERHEAD CONSOLE
CENTER POST CIRCUIT BREAKER PANEL
INSTRUMENT PANEL
6 3 N 33 3
STANDBY COMPASS
406075-232A

GO TO NEXT PAGE

8-5-1. OPERATIONAL CHECK — STANDBY COMPASS (CONT)

1. On overhead console (1) and center circuit breaker panel (2) open the following circuit breakers:

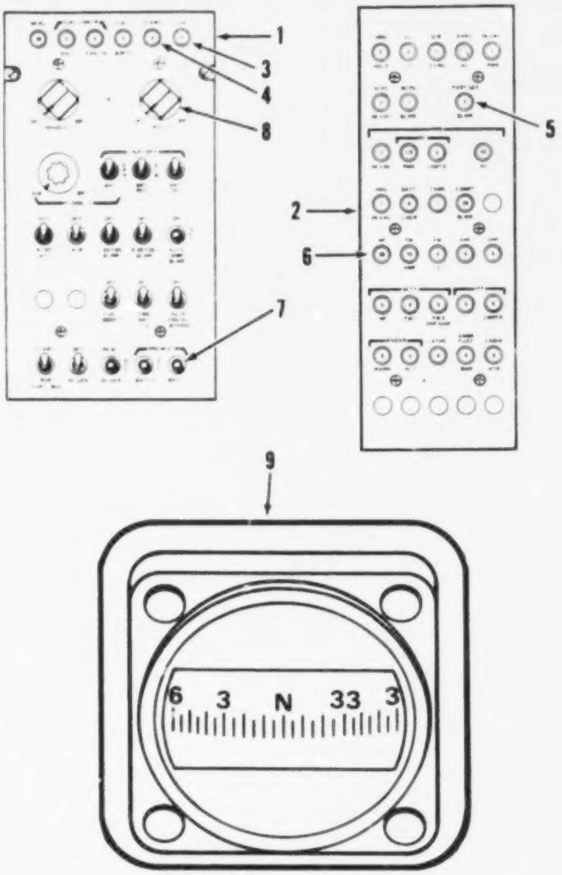
   IGN (3)
   START (4)
   PART SEP BLWR (5)
   HF (6)

2. Set PREHEAT/OFF/BATT 1 switch (7) to BATT 1 on forward overhead console (1).

3. Turn INST LT control (8) on forward overhead console (1) clockwise to BRT and verify that standby compass (9) light brightens.

4. Turn INST LT control (8) counterclockwise and verify that standby compass (9) light dims.

5. Set PREHEAT/OFF/BATT 1 switch (7) to OFF.



406075-2338

END OF TASK

8-5-2. CLEAN, INSPECT, AND REPAIR STANDBY COMPASS

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Gloves, Rubber (D119)
Drycleaning Solvent (D1)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

GO TO NEXT PAGE

8-5-2. CLEAN, INSPECT, AND REPAIR STANDBY COMPASS (CONT)

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean face of indicator with drycleaning solvent (D1).

2. Dry face of indicator with a wiping rag (D53).

INSPECT

3. Inspect for secure and proper mounting.

4. Inspect electrical connector and wiring for damage and security.

5. Inspect float chamber for insufficient fluid or leakage. If card element will not float, replace standby compass.

6. Inspect for detached or unlevel compass card.

7. Inspect compass correction card (form DD 1613) installation and ensure that information is current. Refer to Chapter I for the interval.

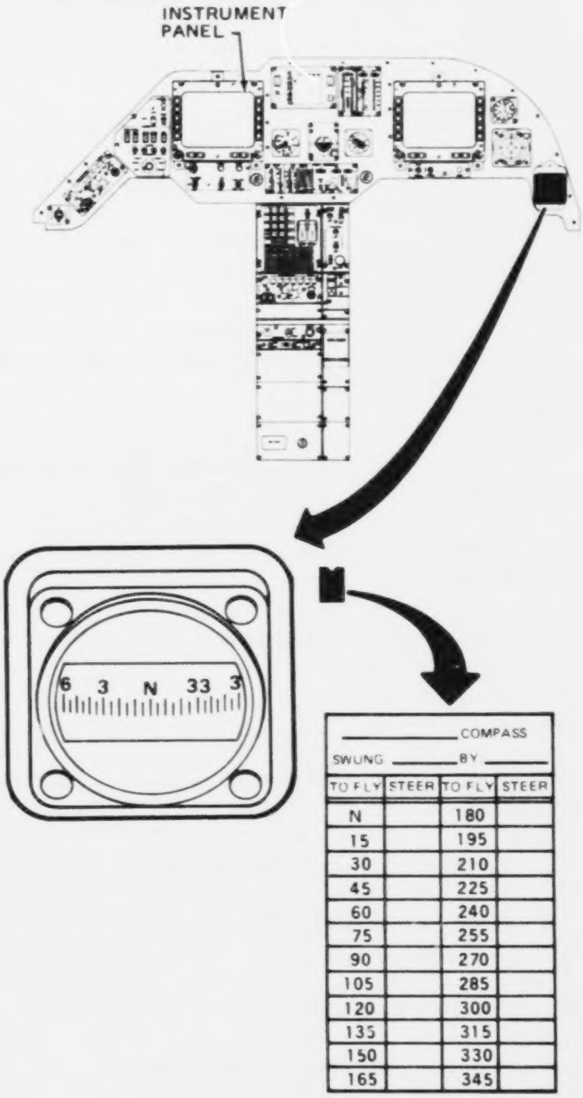
8. If standby compass fails to meet inspection standards and will not adjust on compass adjustments, replace compass.

REPAIR

9. Secure compass in mount as needed.

10. Repair electrical connector and wiring as needed.

INSPECT
END OF TASK



______ COMPASS

SWUNG ______ BY ______

TO FLY	STEER	TO FLY	STEER
N		180	
15		195	
30		210	
45		225	
60		240	
75		255	
90		270	
105		285	
120		300	
135		315	
150		330	
165		345	

406075-240A

8-5-3. REMOVE/INSTALL STANDBY COMPASS

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Personnel Required:

68F Aircraft Electrician
Pilot

References:

TM 55-1520-248-MTF

REMOVE

1. Gain access to instrument panel through the pilot crew door.

2. Remove four screws (1) and remove compass (2) from instrument panel.

3. Disconnect electrical connector (3) at the rear of standby compass (2).

INSTALL

4. Gain access to instrument panel through pilot crew door.

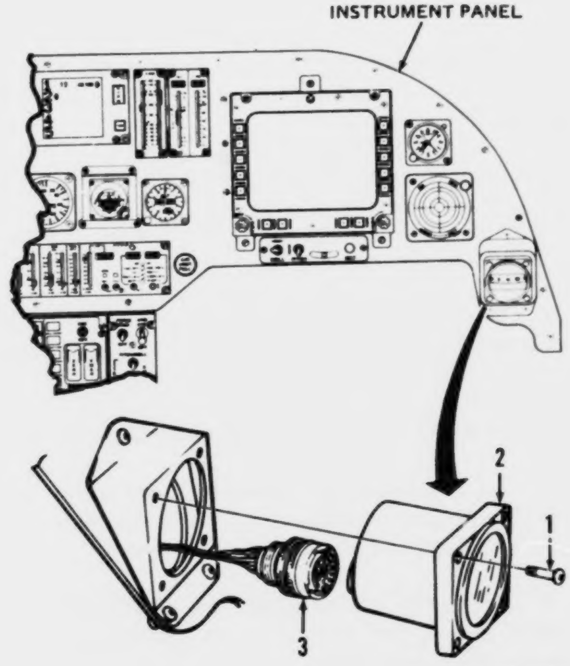
5. Connect electrical connector (3) to compass (2).

6. Align compass (2) with mounting holes and install four screws (1).

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-5-1).

Pilot perform MOC (TM 55-1520-248-MTF).



406075-242A

END OF TASK

8-5-4. OPERATIONAL CHECK — CLOCK

This task covers: Operational Check (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit
APU

Personnel Required:

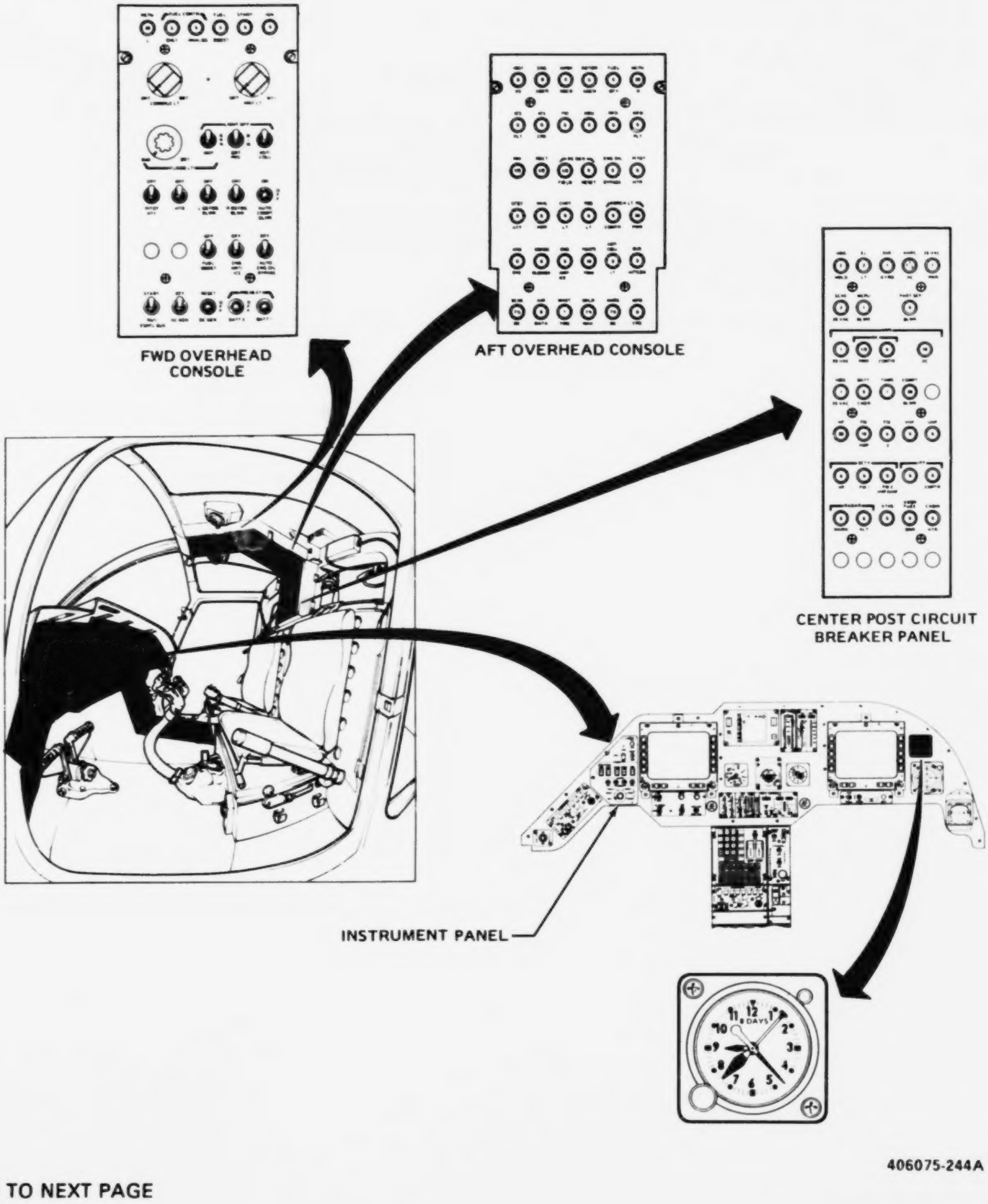
68F Aircraft Electrician

Equipment Condition:

Battery Connected (Task 9-3-9)
Electrical Power On (Task 9-3-10)

GO TO NEXT PAGE

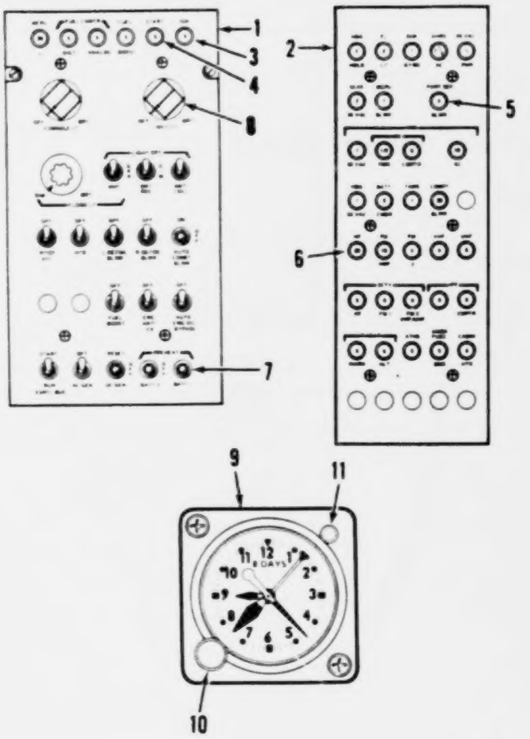
8-5-4. OPERATIONAL CHECK — CLOCK (CONT)


FWD OVERHEAD CONSOLE
AFT OVERHEAD CONSOLE
CENTER POST CIRCUIT BREAKER PANEL
INSTRUMENT PANEL
12
1
2
3
4
5
6
7
8
9
10
11
8 DAYS

406075-244A

GO TO NEXT PAGE

8-5-4. OPERATIONAL CHECK — CLOCK (CONT)



406075-245B

1. On overhead console (1) and center post circuit breaker panel (2) open the following circuit breakers:

   IGN (3)
   START (4)
   PART SEP BLWR (5)
   HF (6)

2. Set PREHEAT/OFF/BATT 1 switch (7) to BATT 1 on forward overhead console (1).

3. Turn INST LT control (8) on forward overhead console (1) clockwise to BRT and verify that clock (9) light brightens.

4. Turn INST LT control (8) counterclockwise and verify that clock (9) light dims.

5. Set PREHEAT/OFF/BATT 1 switch (7) to OFF.

6. Wind clock (9) (if stopped) by turning wind/set knob (10) and verify that clock (9) is running.

7. Set clock (9) (if inaccurate) by pulling and turning wind/set knob (10).

8. Press and release elapsed time knob (11) and verify that the stop-watch and elapse-time indicators are running.

9. Press and release elapsed time knob (11) (second time) and verify that stop-watch and elapse-time indicators stop running.

10. Press and release elapsed time knob (11) (third time) and verify that stop-watch and elapse-time indicators reset to 12 o'clock (zero).

END OF TASK

8-5-5. CLEAN, INSPECT, AND REPAIR CLOCK

This task covers: Cleaning, Inspection, and Repair (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Drycleaning Solvent (D1)
Gloves, Rubber (D119)
Wiping Rags (D53)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

GO TO NEXT PAGE

8-5-5. CLEAN, INSPECT, AND REPAIR CLOCK (CONT)

CLEAN

WARNING

Drycleaning solvent (D1) is flammable and toxic. It can irritate skin and cause burns. Use only in well-ventilated area, away from heat and open flame. Wear goggles and gloves (D119). In case of contact, immediately flush skin or eyes with water for at least 15 minutes. Get medical attention for eyes.

1. Clean face of clock with drycleaning solvent (D1).

2. Dry face of clock with a dry wiping rag (D53).

INSPECT

3. Inspect for secure and proper mounting.

4. Inspect electrical connection and wiring for security and damage.

5. Apply side pressure to rear of clock to determine if mounting hardware is tight.

NOTE

Clock may require winding and/or setting for proper operation (Task 8-5-4).

6. Inspect for loose, cracked, or broken wind/set knobs and face cover.

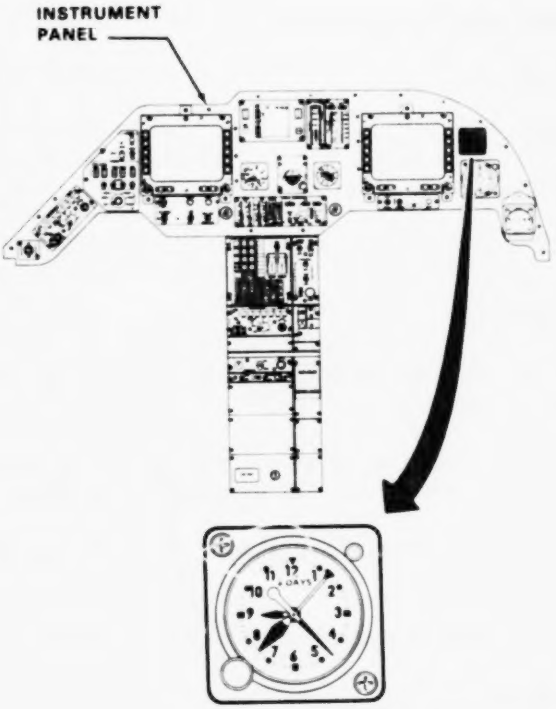
REPAIR

7. Secure clock in mounting as needed.

8. Repair electrical connection and wiring to clock panel as needed.

INSPECT

END OF TASK



406075-247A

8-5-6. REMOVE/INSTALL CLOCK

This task covers: Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Parts:

Self-Locking Nuts

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

REMOVE

1. Gain access to instrument panel through the pilot crew door.

2. Remove two screws (1) and pull clock (2) away from instrument panel as far as wiring will allow.

3. Disconnect electrical connector (3) at the rear of clock (2).

4. Remove clock (2) from instrument panel.

INSTALL

5. Gain access to instrument panel through pilot crew door.

6. Install two self-locking nuts (4) in panel, if necessary.

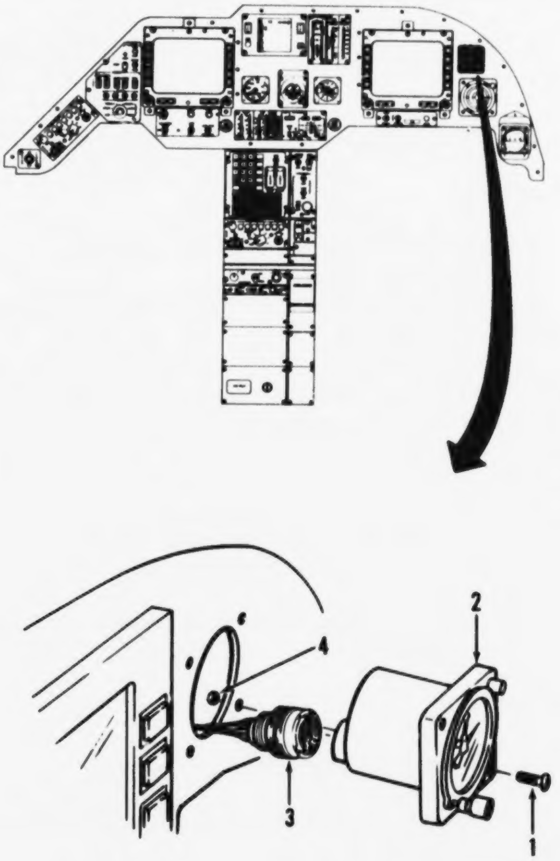
7. Connect electrical connector (3).

8. Position clock (2) in mount and install two screws (1).

INSPECT

FOLLOW-ON MAINTENANCE

Perform operational check (Task 8-5-4).



406075-248B

END OF TASK

8-5-7. CLEAN, INSPECT, AND REMOVE/INSTALL OUTSIDE AIR THERMOMETER

This task covers: Cleaning, Inspection, Removal and Installation (On Helicopter)

INITIAL SETUP

Applicable Configurations:

All

Tools:

Electrical Repairer Tool Kit

Materials:

Cleaning Cloth (D56)

Personnel Required:

66S Scout Helicopter Technical Inspector
68F Aircraft Electrician

References:

TM 55-1500-204-25/1

CLEAN

1. Clean parts with a soft cleaning cloth (D56).

INSPECT

Refer to TM 55-1500-204-25/1.

REMOVE

2. Unscrew and remove sunshield (1), dished washer (2) and case washer (3) from outside of windshield.

3. Remove thermometer (4) and case washer (5) from inside of windshield.

INSTALL

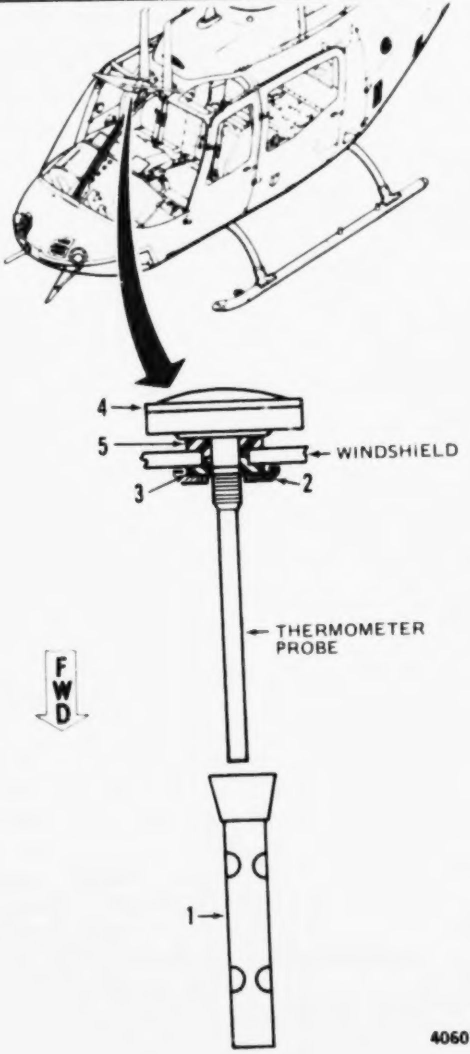
4. Place case washer (5) over probe of thermometer (4) with flat side of washer next to thermometer case. Insert stem and washer through mounting hole from inside windshield.

5. Place case washer (3) flat side out, on probe outside windshield. Seat washer shoulders in mounting hole. Install dished washer (2) with outside edge curving toward windshield. Position thermometer dial correctly before tightening.

6. Place sunshield (1) over probe and tighten securely.

INSPECT

END OF TASK



406070-188

ALPHABETICAL INDEX

SUBJECT PAGE

A

Abbreviations Glossary-1
Abnormal Fretting and/or Wear of Flexframes at Bolted Joints (Engine to Transmission Drive Shaft) K-11
AC Electrical Power System — Operational Check
  (Engine Operating) 9-3
  (Inverter Operation) 9-8
AC External Power — Operational Check 9-83
AC External Power Control Unit
  Clean, Inspect, and Repair 9-261
  Remove/Install 9-263
AC External Power Door Switch
  Clean, Inspect, and Repair 9-234
  Remove/Install 9-236
AC External Power Receptacle
  Clean, Inspect, and Repair 9-238
  Remove/Install 9-240
AC External Power Reset Switch
  Clean, Inspect, and Repair 9-243
  Remove/Install 9-244
AC GEN FAIL Message Not Displayed On MFD (At Flight Idle) K-83
AC Generator
  Clean, Inspect, and Repair 9-246
  Install 9-250
  Remove 9-248
AC Generator Comes On Before Rotor Rpm Reaches 93-96 Percent K-70
AC Generator Remains On When Rotor Rpm is Between 88 and 91 Percent K-71
AC Generator Will Not Come On Line When Rotor Rpm is Between 93 and 96 Percent K-72
AC Power, External, Apply 1-105
Access Door
  Clean, Inspect, and Repair 2-4
Remove/Install 2-24
Access Door, Air Inlet In
  Remove/Install 2-12
Access Door, Chafing Strip
  Clean, Inspect, and Repair 2-22
Access Door, Hinge Halves, Quick-Disconnect Pin, and Lanyard for
  Clean, Inspect, and Repair 2-19
Access Door, Latch Assembly for
  Clean, Inspect, and Repair 2-13

SUBJECT PAGE

A (Cont)

Access Door, Snap Vent in Window
  Remove/Install 2-11
Access Door, Window In
  Remove/Install 2-9
Access Panel, Left
  Remove/Install 2-175
Accident, Components Involved in An E-1
Actuator Idler Bearing (AVIM)
  Remove/Install 11-449
Actuator Support Assembly (AVIM)
  Clean, Inspect, and Support 11-168
Actuator Support Assembly
  Remove/Install 11-164
Actuator Support Bushing (AVIM),
  Remove/Install 11-452
Adapter, Remove/Install 7-100
Adapter Assembly, Components of Anti-Backlash
  Clean, Inspect, and Repair 6-124
Adapter Assembly, Torquemeter System Anti-Backlash
  Install 6-133
  Remove 6-122
Adapter Bearing, Hanger and Segmented Shaft (Typical)
  Remove/Install 6-236
Adhesive , Heat Resistant, Structural Bonding, Use of 2-106
Adjust Main Rotor Autorotation RPM 5-333
Adjust Oil Pressure Regulator Valve 6-333
Adjust Swashplate Uniball Friction, Check and 5-244
Adjustable Tube Assembly
  Clean, Inspect, and Repair 11-258
  Remove/Install 11-161
  Repair 11-163
Adjustable Tube Assembly (Typical)
  Remove/Install 11-254
Adjustable Tube Assembly Rod End Bearing (Typical)
  Remove/Install 11-260
Adjustment of Minimum Friction or Collective System 11-86
Advisory EXT PWR Not Displayed On MFD (External AC Power In Use) K-85
Advisory EXT PWR Not Displayed On MFD (External DC Power In Use) K-86

SUBJECT PAGE

A (Cont)

- Advisory Message ENG ANTI-ICE ON is Not Lit (Helicopter at Idle and ENG ANTI-ICE Switch is OFF) ... K-360
- Advisory PITOT HEAT ON Message Not Displayed on MFD with PITOT HEAT Switch On ... K-87
- Aft Crosstube
  - Clean, Inspect, and Repair ... 3-35
  - Remove/Install ... 3-34
- Aft Crosstube Components
  - Clean, Inspect, and Repair ... 3-41
  - Remove/Install ... 3-37
- Aft Crosstube Support Assembly
  - Clean, Inspect, and Repair ... 3-8
- Aft Crosstube Support Beam and Components
  - Clean, Inspect, and Repair ... 3-45
  - Remove/Install ... 3-43
- Aft Crosstube Support Beam Bushings (AVIM)
  - Remove/Install ... 3-47
- Aft Fairing Assembly
  - Clean, Inspect, and Repair ... 2-68
  - Remove/Install ... 2-67
- Aft NG Cable Uniball Bearing
  - Remove/Install ... 4-116
- Aft Overhead Console Panel Not Lit After CONSOLE LT Control is Turned From OFF to BRT ... K-518
- Aft Shaft Assembly
  - Clean, Inspect, and Repair ... 6-226
  - Remove/Install ... 6-223
- Aft Transverse Beam
  - Clean, Inspect, and Repair ... 2-314
- AHRS Bit ... J-7
- Air Data Power Supply
  - Remove/Install ... 8-69
- Air Data Transducer
  - Clean, Inspect, and Repair ... 8-67
  - Install ... 8-68
  - Remove ... 8-66
- Air Data System and Pitot-Static — Operational Check ... 8-56
- Air Duct Coupling, Avionic Cooling System Flexible
  - Remove/Install ... 9-490
- Air Induction Cowl
  - Clean, Inspect, and Repair ... 4-50
  - Install ... 4-52
  - Remove ... 4-48

SUBJECT PAGE

A (Cont)

- Air Induction Cowl Access Door
  - Clean, Inspect, and Repair ... 4-56
  - Remove/Install ... 4-55
- Air Inlet In Access Door
  - Remove/Install ... 2-12
- Aircraft Inspection Checksheet ... 1-136
- Airframe ... 2-1
  - Flyable Storage ... E-5
  - Intermediate Storage ... E-25
  - Short Term Storage ... E-12
- Airplane Weighing Record, DD Form 365B ... G-6
- Airspeed Indicator Not Lit After INST LT Control is Turned From OFF to BRT ... K-489
- Aliphatic Polyurethane Top Coatings, Use of ... 2-10
- Alternator Control Unit
  - Clean, Inspect, and Repair ... 9-253
  - Remove/Install ... 9-255
- Altimeter, Standby
  - Clean, Inspect, and Repair ... 8-41
  - Operational Check ... 8-38
  - Remove/Install ... 8-43
- Amplifier Bit, IFM ... J-11
- Analog and Digital Equipment ... 1-37
- ANALOG Test Switch Does Not Cause Engine Deceleration When Pressed ... K-466
- Anti-Collision Light (Typical)
  - Install ... 9-270
  - Remove ... 9-268
- Anti-Collision Light Flasher
  - Install ... 9-274
  - Remove ... 9-272
- Anti-Collision Lights — Operational Check ... 9-165
- Anti-Collision Lights Do Not Flasn (ANTI COLL Switch in ANTI COLL) ... K-527
- Anti-Ice Solenoid Valve Does Not Close (No Reduction in TGT) (Helicopter At Idle, ENG ANTI-ICE Switch Set to OFF) ... K-362
- Appendix A — References ... A-1
- Appendix B — Maintenance Allocation Chart ... B-1
- Appendix C — Helicopter Inventory Master Guide ... C-1
- Appendix D — Expendable Supplies and Materials List ... D-1
- Appendix E — Storage of Helicopter ... E-1
- Appendix F — Wiring Diagrams ... F-1
- Appendix G — Weight and Balance ... G-1

SUBJECT PAGE

A (Cont)

Appendix H — Illustrated List of Manufactured Items (AVIM) (AVUM) H-1
Appendix J — Fault Detection Location System (FDLS) Failure Codes J-1
Appendix K — Maintenance Action Precise Symptoms K-1
Apply AC External Power 1-105
Apply 28 VDC External Power 1-103
Approved Fluids, Table 1-3 1-64
Approved Foreign Commercial Fuels, Table 1-1 1-62
Approved Fuels, Table 1-1 1-62
Approved Oils, Table 1-2 1-63
Armament Hard Points
  Clean, Inspect, and Repair 2-178
Armor Seat Panels
  Clean, Inspect, and Repair 2-51
  Remove/Install 2-48
Assemble
  Engine 4-40
  Main Rotor Mast Assembly (AVIM) 6-159
  Main Rotor Swashplate and Support (AVIM) 5-284
  Mixing Valve 13-7
  Multiparameter Display (MFD) (AVIM) 8-16
  Tail Rotor Assembly 5-340
  Tail Rotor Hub (AVIM) 5-389
Assemble/Disassemble
  Dual Tachometer (AVIM) 8-27
  Ground Handling Wheels 1-122
  Jib Hoist 1-107
  Oil Tank 4-72
  TGT/TRQ Indicator (AVIM) 8-19
ATHS Bit J-9
Attach Bolts, Tailboom
  Clean, Inspect, and Repair 2-211
Attach Fittings, Tailboom and Aft Fuselage
  Clean, Inspect, and Repair 2-203
Audio Distribution Unit (ADU) Bit J-11
Autotransformer 28V
  Clean, Inspect, and Repair 9-257
  Remove/Install 9-259
AUX RCPT Circuit Breaker, 28 VDC 9-452
Auxiliary Power Plants 15-1
Auxiliary 28 VDC Receptacle Will Not Supply Voltage K-724
Avionic Cooling System Blower
  Install 9-484
  Remove 9-481
Avionic Cooling System Components
  Clean, Inspect, and Repair 9-476
Avionic Cooling System Flexible Air Duct Coupling
  Remove/Install 9-490
Avionic Cooling System Motor Intake Duct Assembly
  Remove/Install 9-487
Avionic Cooling System Thermo Switch (Typical)
  Remove/Install 9-488
Avionic Equipment E-12, E-25
  Intermediate Storage E-25
  Short Term Storage E-12
Avionics Compartment Blower Does Not Operate K-89
Avionics Compartment Blower Not Controlled by Temperature Sensing Switches K-92
Avionics Compartment, Electrical Wiring and Cabling In
  Install 10-84
  Remove 10-77
Avionics Equipment — Installed 18-1
Avionics Support
  Clean, Inspect, and Repair 2-173

B

Back Cushion
  Clean, Inspect, and Repair 2-46
  Remove/Install 2-45
Balance Tail Rotor Assembly 5-472
Basic Weight and Balance Record, DD Form 365C G-9
Basic Weight Checklist, DD Form 365A G-2
BATT CHGR FAIL Message Does Not Appear on MFD (Jumper Wire Between 2PS2P2-K and Airframe, DC External Power Applied) K-284
BATT PREHEAT ON Not Displayed on MFD (External AC Power On and Jumper Between Pins 1 & 3 of Connector 2BT2P2) K-84
BATT PREHEAT ON Not Displayed on MFD (External Power On and Jumper Between Pins 1 & 3 of Connector 2BT1P2) K-105
Battery
  Clean, Inspect, and Repair 9-185
  Disconnect/Connect 9-199
  Remove/Install 9-187

SUBJECT PAGE

B (Cont)

Battery 1 Half Voltage (Approximately) Not Present at Connector 2BT1J2-9 .... K-246
Battery 1 or Battery 2 Does Not Disconnect From Battery Generator Bus at Flight Idle (During Charger-Monitor Operational Check) K-278
Battery 1 Preheat Light is Lit at Temperature Above -10°F K-95
Battery 1 Preheat Light Not Lit During Press-To-Test K-94
Battery 1 Voltage Not at Connector 2BT1J2-15 .... K-96
Battery 1 Will Not Come on (BATT 1 Switch is Set to BATT 1) K-248
Battery 1 Will Not Stay Connected to Battery-Generator Bus at Flight Idle (During Charger-Monitor Operational Check) K-271
Battery 2 Half Voltage (Approximately) Not Present at Connector 2B12J2-9 .... K-247
Battery 2 Preheat Light Comes On at a Temperature Above -10°F K-100
Battery 2 Preheat Light is Not Lit in Press-To-Test K-98
Battery 2 Will Not Come On (BATT 2 Switch is Set to BATT 2) K-101
Battery 2 Will Not Stay Connected to Battery-Generator Bus at Flight Idle (During Charger-Monitor Operational Check) K-278
Battery Charger-Monitor — Operational Check 9-10
Battery No. 1 — Operational Check 9-17
Battery No. 2 — Operational Check 9-24
Battery Preheat Indicator Light
  Clean, Inspect, and Repair 9-192
  Remove/Install 9-193
Battery Voltage Does Not Increase at 2K2-A1 or 2K2-A2 (During Charger-Monitor Operational Check) K-270
Battery Voltage Not Found at 2BT2P2-15 .... K-106
Beam and Components, Support, Aft Crosstube
  Clean, Inspect, and Repair 3-45
  Remove/Install 3-43
Beam, Aft Transverse
  Clean, Inspect, and Repair 2-314
Beam Assemblies
  Clean, Inspect, and Repair 2-305
Beam, Forward Transverse
  Clean, Inspect, and Repair 2-312

SUBJECT PAGE

B (Cont)

Beam, Support and Components, Aft Crosstube
  Remove/Install 3-43
Bearing Assembly and Torquemeter Support
  Install 6-119
  Remove 6-92
Bearing Assembly (AVIM), and Components of Torquemeter Support
  Clean, Inspect, and Repair 6-102
Bearing (AVIM), Support, Freewheeling Unit Tail Rotor Output Shaft
  Remove/Install 6-208
Bearing (AVIM), Torquemeter Support
  Remove/Install 6-96
Bearing, Bearing Hanger, Impeller, Fan Shaft and Blower Housing
  Clean, Inspect, and Repair 6-257
  Remove/Install 6-251
Bearing, Hanger and Tail Rotor Driveshaft Alignment and Coupling Inspection 6-274
Bearing Hanger Brackets (Forward and Aft), Fan Shaft
  Clean, Inspect, and Repair 6-271
  Remove/Install 6-268
Bearing Hanger Supports, Tailboom
  Clean, Inspect, and Repair 2-244
  Remove/Install 2-229
Bearing In Force Gradient Cylinder (AVIM)
  Remove/Install 11-194
Bellmouth, Remove/Install 4-190
BIT Page Does Not Display GO, NO GO, or FUEL CONTROL Advisory after DIGITAL Test Switch is Pressed K-468
Blade, Main Rotor
  Core Repair (AVIM) 5-143
  Inspect 5-107
  Installation/Replacement Polyurethane Tape On 5-154
  Refinish (AVIM) 5-123
  Remove/Install 5-18
  Remove/Install OFF Helicopter 5-16
  Remove/Install Trim Tab (AVIM) 5-127
  Remove/Replace Erosion Strip Splice Cover (AVIM) 5-141
  Repair Erosion Shield 5-130
  Repair Erosion Strip Splice Cover 5-135
  Repair Inboard Erosion Strip 5-146
  Repair Outboard Erosion Strip 5-132
  Repair Skin by Patching (AVIM) 5-115

SUBJECT PAGE

B (Cont)

Blade, Main Rotor (Cont)
  Repair Trailing Edge 5-131
  Repair Trim Tab 5-121
  Repair Replacement, Inboard Erosion Strip (AVIM) 5-136
Bleed Air Heater Tube and Gasket
  Remove/Install.......................... 4-30
Bleed Hydraulic System..................... 7-16
Blower, Avionic Cooling System
  Install 9-484
  Remove 9-481
Blower, Defogging, Remove/Install 13-34
Bolt, Mount
  Clean, Inspect, and Repair 2-308
Bolts, Tailboom Attach
  Clean and Inspect 2-209
Boost Pump
  Clean, Inspect, and Repair 10-41
  Install 10-42
  Remove 10-39
Boosted Bellcrank Assembly
  Clean, Inspect, and Repair 11-272
  Remove/Install..........................11-270
Boosted Bellcrank Assembly (AVIM)
  Repair 11-274
Boosted Tube Assembly, Remove/Install ...11-278
Breather, Tail Rotor Gearbox, Repair 6-299
Breather Tube Assembly, Remove/Install 6-73
Build Up Oil Cooler
  Clean, Inspect, and Repair 6-362
Build Up Transmission 6-40
Bulb P/N 56B3C (for Air Data System)
  Remove/Install.......................... 8-64
Bulb, Torquemeter Temperature
  Remove/Install.......................... 6-114
Bumper and Pin, Vertical Fin,
  Remove/Install.......................... 2-258
Bushing
  Clean, Inspect, and Repair 7-99
  Remove/Install.......................... 7-97

C

Cabin Roof Drain
  Clean, Inspect, and Repair 2-176

SUBJECT PAGE

C (Cont)

Cabin Roof Skylight
  Clean, Inspect, and Repair 2-123
  Remove/Install.......................... 2-121
Cable Assembly, Remove/Install 10-18
Cable, Control, Vent
  Clean, Inspect, and Repair 13-38
  Remove/Install.......................... 13-36
Cable, Heater Control
  Clean and Inspect 13-17
  Remove/Install.......................... 13-15
Calibration (TAMS), Static.................. 9-471
Cap, Spring and Rod End Assemblies
  Remove/Install.......................... 2-316
Cartridge, Remove/Install 10-44
Categories of Storage....................... E-1
Caution Message CHIP END FREEWHEEL Does Not Come On (Connector 1E4P1 Connected to Special Test Tool and Switch Set to ON) K-338
Caution Message CHIP ENG LOWER Does Not Come On (Engine Lower Chip Detector Connector Connected to Special Test Tool and Test Switch Set to ON) K-367
Caution Message CHIP ENG UPPER Does Not Come On (Engine Upper Chip Detector Connector Connected to Special Test Tool and Test Switch Set to ON) K-365
Caution Message CHIP T/R GRBX Does Not Come On (Connector 1E3P1 is Connected to Special Test Tool and Test Switch Set to ON) K-296
Caution Message CHIP XMSN SUMP Does Not Come On (Connector 1E1P1 Connected to Special Tool and Switch Set to ON) K-324
Caution Message CHIP XMSN UPPER Does Not Come On (Connector 1E2P1 Connected to Special Test Tool and Switch Set to ON) K-309
Caution Message FUEL BOOST FAIL Comes On (Fuel Boost Pump On and Operating) K-382
Caution Message FUEL BOOST FAIL Does Not Come On (Jumper Wire Connected Between 1S4P1-A and 1S4P1-B and FUEL BOOST Switch ON) K-384
Caution Message FUEL CONTROL Does Not Come On (Connector 1A3P1 Disconnected)............................ K-472

SUBJECT PAGE

C (Cont)

Caution Message FUEL FILTER BYPASS Does Not Come On (Jumper Between Pins B and C of 1S3P1) K-377
Caution Message FUEL LOW Does Not Come On at 100 Pounds Remaining Fuel .. K-401
Caution Message HIGH TEMP T/R GRBX Does Not Come On When Tail Rotor Temperature Switch is Grounded K-295
Caution Message LOW OIL PRESS ENG Remains On (Helicopter Stabilized at Flight Idle and DC Generator On) K-403
Caution Message LOW OIL PRESS XMSN Does Not Come On When External DC Power is Applied K-351
Caution Message LOW OIL PRESS XMSN Will Not Go Out With Helicopter at Flight Idle and DC Generator On) K-352
Caution Message LOW OIL QUANTITY ENG Does Not Come On When Terminal 1TB1-1 is Grounded K-369
Caution Message OIL BYPASS ENG Does Not Come On (1TB1-1 Jumpered to Ground and ENG OIL BYPASS Switch Set to AUTO) K-371
Caution Message On MFD, CHIPS FREEWHEELING UNIT K-8
Caution Message On MFD, CHIPS XMSN SUMP K-6
CDS Bit J-8
CDS BIT Provides NO GO Error Codes on MFD When Checking MUX DATA BUS K-113
CDS Failed K-19
Center Console Top Cover Remove/Install 11-485
Center Post Circuit Breaker Panel Not Lit After CONSOLE LT Control is Turned From OFF to BRT K-518
Center Post Duct and Doors
  Clean, Inspect, and Repair 2-114
  Remove/Install 2-112
Chadwick Rotor Balancing Equipment Inoperative K-720
Chafing Strip for Access Door
  Clean, Inspect, and Repair 2-22
Channel Select Switch, CPO
  Remove/Install 9-437
Characteristics Capabilities and Features, Equipment 1-4
Charger-Monitor
  Clean, Inspect, and Repair 9-195
  Remove/Install 9-198

SUBJECT PAGE

C (Cont)

Charger-Monitor Does Not Open Opposite Battery Relay (With Other Battery Relay Closed and Its Battery Connected to Battery-Generator Bus at Flight Idle) K-285
Chart, Maintenance Allocation B-1, B-6
Check
  Fuel Probe and Indicating System 10-69
  Serviceability of Freewheeling Unit 6-8
  Serviceability of Main Transmission 6-3
  Serviceability of Tail Rotor Gearbox 6-13
Check and Adjust Swashplate Uniball Friction 5-244
Check, Engine Oil Pressure Transmitter 4-28
Checksheet, Aircraft Inspection 1-136
Chemical Conversion Coating for Aluminum, Use of 2-108
Chips FREEWHEELING UNIT Caution Message on MFD K-8
Chips XMSN MAST BEARING Caution Message on MFD K-15
Chips XMSN SUMP Caution Message on MFD K-6
Circuit Breaker, 28 VDC AUX RCPT Remove/Install 9-452
Circuit Breaker From DC Equipment Electrical Assembly (Typical), Remove 9-352
Circuit Breaker From Nose Compartment (Typical), Remove 9-363
Circuit Breaker In Center Post Circuit Breaker Panel (Typical), Remove/Install 9-312
Circuit Breaker In DC Equipment Electrical Assembly (Typical) 9-354
Circuit Breaker In Nose Compartment (Typical), Install 9-365
Circuit Breaker In Overhead Console (Typical), Remove/Install 9-310
Circuit Breaker, Remote Control
  Install 9-359
  Remove 9-356
Circuit Breakers (Typical)
  Clean, Inspect, and Repair 9-303
Clean and Inspect
  Corner Mount 2-298
  Engine Mount Legs 4-147
  Engine, Rotor, and Transmission Instruments 8-7
  Fuel Differential Pressure Switch 4-134
  Pylon 2-281
  Tail Rotor Hub Components (AVIM) 5-380
  Tailboom Attach Bolts 2-209

SUBJECT PAGE

C (Cont)

Clean, Inspect, and Remove/Install Outside Air Thoermometer 8-101
Clean, Inspect, and Repair
  AC External Power Control Unit 9-261
  AC External Power Door Switch 9-234
  AC External Power Receptacle 9-238
  AC External Power Reset Switch 9-243
  AC Generator 9-246
  Access Door 2-4
  Access Door Chafing Strip for 2-22
  Access Door Hinge Halves, Quick-Disconnect Pin, and Lanyard for 2-19
  Access Door Latch Assembly for 2-13
  Actuator Support Assembly (AVIM) 11-168
  Adjustable Tube Assembly 11-258
  Aft Crosstube 3-35
  Aft Crosstube Components 3-41
  Aft Crosstube Support Assembly 3-8
  Aft Crosstube Support Beam and Components 3-45
  Aft Fairing Assembly 2-68
  Aft Shaft Assembly 6-226
  Aft Transverse Beam 2-314
  Air Data Transducer 8-67
  Air Induction Cowl 4-50
  Air Induction Cowl Access Door 4-56
  Alternator Control Unit 9-253
  Armament Hard Points 2-178
  Armor Seat Panels 2-51
  Autotransformer 26V 9-257
  Avionic Cooling System Components 9-476
  Avionics Support 2-173
  Back Cushion 2-46
  Battery 9-185
  Battery Preheat Indicator Lights 9-192
  Beam Assemblies 2-305
  Bearing Hanger, Bearing, Impeller, Fan Shaft and Blower Housing 6-257
  Boost Pump 10-41
  Boosted Bellcrank Assembly 11-272
  Bushing 7-99
  Cabin Roof Drain 2-176
  Cabin Roof Skylight 2-123
  Center Post Duct and Doors 2-114
  Chafing Strip for Access Door 2-22
  Charger-Monitor 9-195
  Circuit Breakers (Typical) 9-303
  Clevis Adapter 7-102
  Clock 8-98

SUBJECT PAGE

C (Cont)

Clean, Inspect, and Repair (Cont)
  Collective Boosted Bellcrank Assembly (AVIM) 11-153
  Collective Control Input Valve Bellcrank Assembly 11-178
  Collective Control Link Assembly 11-142
  Collective Controls 11-36
  Collective Friction Clamp 11-87
  Collective Jackshaft 11-75
  Collective Jackshaft Spacer 11-81
  Collective Pitch Link Assembly 11-47
  Components of Antibacklash Adapter Assembly 6-124
  Components of Freewheeling Unit (AVIM) 6-179
  Components of Shaft and Bearing Hanger Assembly 6-238
  Components of the Main Rotor Mast Assembly (AVIM) 6-143
  Components of Torquemeter Support and Bearing Assembly (AVIM) 6-102
  Copilot Collective Grip Assembly 11-64
  Copilot Collective Stick Elbow Assembly 11-129
  Copilot Collective Stick Inner Tube Assembly 11-67
  Copilot Collective Stick Outer Tube Assembly 11-69
  Copilot Collective Stick Throttle Arm 11-127
  CPO Cyclic Stick Fitting Assembly 11-348
  CPO Cyclic Stick Gimble Assembly 11-345
  CPO Cyclic Stick Housing Assembly 11-380
  CPO Cyclic Stick Link Assembly 11-372
  CPO Cyclic Stick Quick-Disconnect Lever Assembly 11-368
  CPO Cyclic Stick Plate Assembly 11-358
  CPO Cyclic Stick Socket Housing Assembly 11-384
  CPO Cyclic Stick Stud 11-364
  CPO Cyclic Stick Support Assembly 11-354
  CPO Cyclic Stick Tube Assembly 11-390
  Crew Door Jettison Mechanism 2-31
  Cyclic, Collective and Directional Control Servoactuators (Typical) 7-91
  Cyclic Friction Knob and Shaft 11-238
  Cyclic Mixer Bellcrank Assembly and Rod End Bearing 11-250
  Cyclic Mixer Bellcrank Assembly (AVIM) 11-252

SUBJECT PAGE

C (Cont)

Clean, Inspect, and Repair (Cont)
- Cyclic Mixer Bellcrank Assembly Clevis 11-247
- Cyclic Stick Pivot Bearing Retainer 11-284
- Cyclic Torque Tube 11-215
- Cyclic Transducer Spacer 11-290
- Cyclic Yoke 11-228
- Data Bus Coupler or Terminator 9-427
- DC External Power Connector 9-220
- DC External Power Door Switch 9-210
- Defuel Valve 10-48
- Directional Control Force Gradient 11-456
- Directional Control Pedals 11-399
- Directional Control Rotary Actuator 11-469
- Droop Compensator Potentiometer Arm 11-146
- Dual Tachometer (AVIM) 8-29
- Engine Cowl Assembly 2-60
- Engine Cowl Assembly Side Panel 2-64
- Engine Electronic Control 9-454
- Engine Mount Trunnion 4-144
- Engine to Transmission Driveshaft 6-26
- Eyebolt 3-21
- Fan Shaft Bearing Hanger Brackets (Forward and Aft) 6-271
- Fin Assembly 2-240
- Flight Control Bellcranks, Idlers, and Walking Beams 11-496
- Flight Control Supports 11-510
- Flight Control Tubes 11-487
- Force Gradient Tube Assembly 11-206
- Fore-and-Aft Force Gradient 11-189
- Fore-and-Aft Magnetic Brake 11-198
- Forward Crosstube 3-24
- Forward Crosstube Components 3-32
- Forward Crosstube Strap 3-6
- Forward Fairing Assembly 2-53
- Forward Firewall 4-184
- Forward Shaft Assembly 6-221
- Forward Transverse Beam 2-312
- Fuel Cell (AVIM) 10-64
- Fuel Cell Support Assemblies 10-65
- Fuel Shutoff Lever 10-5
- Fuel Shutoff Valve (AVIM) 10-15
- Fuel Sump 10-36
- Fuel System Hoses 10-26
- Ground Handling Wheels 1-128
- Heater Control Cable 13-17
- Heating and Ventilation System Ducts 13-18

SUBJECT PAGE

C (Cont)

Clean, Inspect, and Repair (Cont)
- Hinge Halves, Quick-Disconnect Pin and Lanyard for Access Doors 2-19
- Honeycomb Panels (Typical) 2-131
- Horizontal Stabilizer 2-269
- Hydraulic Hoses 7-29
- Hydraulic Pressure Switch 7-37
- Hydraulic Pump 7-78
- Hydraulic Reservoir 7-71
- Hydraulic Solenoid Valve 7-51
- Hydraulic System Tubing 7-25
- Input Cyclic Control Bellcrank Assembly 11-264
- Instrument Panel Glareshield 8-35
- Integrally Lit Panel (Typical) 9-305
- Jackshaft Support Assembly and Bearing 11-118
- Jettison Mechanism, Crew Door 2-31
- Latch Assembly for Access Door 2-13
- Latch Assembly for Crew Door 2-32
- Lateral Force Gradient 11-201
- Lateral Magnetic Brake 11-209
- Lights (Typical) 9-266
- Lower Window 2-127
- Lower Wire Cutter 2-73
- Main Rotor Blade Bolt 5-27
- Main Rotor Controls Antidrive Lever (AVIM) 5-229
- Main Rotor Controls Antidrive Link (AVIM) 5-236
- Main Rotor Controls Collective Lever (AVIM) 5-209
- Main Rotor Controls Collective Link (AVIM) 5-219
- Main Rotor Controls Drive Hub Set (AVIM) 5-185
- Main Rotor Controls Drive Lever (AVIM) 5-177
- Main Rotor Controls Drive Link (AVIM) 5-169
- Main Rotor Controls Gimbal Ring (AVIM) 5-195
- Main Rotor Controls Spacer 5-225
- Main Rotor Drive Ring Set (AVIM) 5-91
- Main Rotor Drop Stop Plug 5-34
- Main Rotor Droop Stop Stud 5-42
- Main Rotor Expandable Bolt 5-25
- Main Rotor Grip Assembly 5-84

SUBJECT PAGE

C (Cont)

- Clean, Inspect, and Repair (Cont)
  - Main Rotor Grip Lead Lag Bearings (AVIM) 5-76
  - Main Rotor Hub Damper (AVIM) 5-52
  - Main Rotor Hub Lower Cone 5-14
  - Main Rotor Hub Lower Plate 5-94
  - Main Rotor Hub Shear Bearings (AVIM) 5-63
  - Main Rotor Hub Upper Plate 5-58
  - Main Rotor Hub Yoke 5-101
  - Main Rotor Pitch Horn Assembly (AVIM) 5-69
  - Main Rotor Pitch Link 5-162
  - Main Rotor Swashplate and Support 5-242
  - Main Rotor Swashplate and Support Components (AVIM) 5-257
  - Main Rotor Upper Cone Plate Assembly 5-11
  - Main Rotor Yoke Adapter Assembly 5-79
  - Maintenance Step (Left Side) 2-130
  - Miscellaneous Electrical Equipment 9-300
  - Mixing Valve (AVIM) 13-5
  - Mount Bolt 2-308
  - Multiparameter Display (MPD) (AVIM) 8-12
  - Night Vision Power Supply 9-292
  - Oil Cooler, Bypass Valve 4-85
  - Oil Cooler Duct 6-369
  - Oil Drain Valve 6-355
  - Oil Filter Bypass Valve Assembly 6-339
  - Oil Filter Manifold 6-330
  - Oil Pressure Regulator Valve 6-335
  - Oil Pressure Switch 6-348
  - Oil Pressure Transducer 6-351
  - Oil Tank Assembly 4-71
  - Oil Tank Support and Oil Cooler Support Duct 4-88
  - Overload Sensing Control 9-225
  - Particle Separator 4-60
  - Pedal Adjustment and Support Assemblies 11-398
  - Pilot Collective Stick Control Panel Box 11-97
  - Pilot Collective Stick Detent Button 11-101
  - Pilot Collective Stick Elbow Assembly 11-107
  - Pilot Collective Stick Inner Tube Assembly 11-109
  - Pilot Collective Stick Outer Tube Assembly 11-105
  - Pilot Collective Stick Ring Gears 11-111
  - Pilot Collective Stick Throttle Arm 11-113
  - Pilot Collective Stick Throttle Friction Plug 11-99

SUBJECT PAGE

C (Cont)

- Clean, Inspect, and Repair (Cont)
  - Pilot Collective Stick Throttle Grip Assembly 11-103
  - Pilot Cyclic Pivot Assembly 11-286
  - Pilot Cyclic Position Adjustment Indicator Pin 11-312
  - Pilot Cyclic Position Adjustment Rod End 11-304
  - Pilot Cyclic Stick Fitting Assembly 11-328
  - Pilot Cyclic Stick Indicator Pin Retainer 11-288
  - Pilot Cyclic Stick Pivot Bearing 11-299
  - Pilot Cyclic Stick Stop 11-292
  - Pilot Cyclic Tube Assembly 11-325
  - Pitch Rate Sensor 9-419
  - Pitot-Static Tubing and Fittings 8-62
  - Pitot Tube 8-86
  - Pivot Support Assembly 11-283
  - Plenum Assembly 13-32
  - Pylon Fitting Assembly 6-77
  - Quick-Disconnect Coupling Halves 4-93
  - Remote Sensor 13-13
  - Roll Rate Sensor 9-423
  - Seat Restraint 2-42
  - Signal Conditioning Unit and Chain (TAMS) 9-463
  - Signal Conditioning Unit (Mast Torque) 9-459
  - Skid Shoes and Skid Tube Rivnut 3-18
  - Skid Tube Assembly 3-12
  - Spacer 5-373
  - Spring Assembly 2-310
  - Standby Airspeed Indicator 8-51
  - Standby Altimeter 8-41
  - Standby Attitude Indicator 8-46
  - Standby Compass 8-92
  - Starter-Generator 9-214
  - Stop-Down Assembly 2-302
  - Stop Nut 2-300
  - Sump Valve 10-52
  - Tailboom 2-187
  - Tailboom/Aft Fuselage Attach Fittings 2-203
  - Tailboom Attach Bolts 2-211
  - Tailboom Bearing Hanger Supports 2-224
  - Tail Light Support 2-275
  - Tail Rotor Assembly 5-337
  - Tail Rotor Blades (AVIM) 5-391
  - Tail Rotor Control Tube Driver Plate 5-346
  - Tail Rotor Counterweight Bracket 5-377
  - Tail Rotor Counterweight Support 5-368

SUBJECT PAGE

C (Cont)

Clean, Inspect, and Repair (Cont)
  Tail Rotor Crosshead 5-351
  Tail Rotor Driveshaft Covers 2-234
  Tail Rotor Gearbox 6-296
  Tail Rotor Gearbox Pitch Change
    Housing 5-465
  Tail Rotor Gearbox Support Assembly 2-214
  Tail Rotor Hub Components Spacer
    (AVIM) 5-380
  Tail Rotor Pitch Change Control Tube 5-438
  Tail Rotor Pitch Change Idler 5-430
  Tail Rotor Pitch Change Lever (AVIM) 5-421
  Tail Rotor Pitch Change Rod Assembly 5-414
  Tail Rotor Pitch Change Trunnion 5-463
  Tail Rotor Pitch Change Trunnion Cap 5-461
  Tail Rotor, Pitch Horn 5-375
  Tail Rotor Pitch Link 5-341
  Tail Rotor Retaining Nut 5-371
  TAMS Linear Variable Differential
    Transformer (LVDT) 9-468
  Temperature Control Valve
    (Engine Oil System) 6-357
  TGT/TRQ Indicator (AVIM) 8-22
  Tow Fittings 3-49
  Transducer 11-59
  Transformer Rectifier Unit (TRU) 9-181
  Transmission 6-29
  Transmission Oil Jets (Number One
    and Two) 6-344
  Transmission Oil Pump 6-320
  Trunnion Bearing 7-95
  Trunnion Bearing Assembly 11-54
  Upper Wire Cutter 2-86
  Vent Control Cable 13-38
  Voltage Regulator 9-229
  Windshield Assembly 2-119
Clean, Inspect, and Repair, and
  Build Up Oil Cooler 6-362
Clean, Inspect, Repair and Refinish Tail
  Rotor Blades 5-391
Clean, Remove, Inspect, Repair, and Install
  Hydraulic Filter Assembly 7-15
Clean/Tighten Searchlight Electrical
  Connections 9-286
Cleaning Helicopter 1-60
Clevis Adapter
  Clean, Inspect, and Repair 7-102

SUBJECT PAGE

C (Cont)

Clock
  Clean, Inspect, and Repair 8-98
  Operational Check 8-95
  Remove/Install 8-100
Clock Fails to Illuminate K-45
Clock is Not Lit After INST LT Control is
  Turned From OFF to BRT K-490
Clogged Oil Drain Tubes, Remove/Install 4-95
Closed Circuit Refueling (Power Off or
  Rapid) 1-40
Coating, Chemical Conversion, for Aluminum,
  Use of 2-108
Coating, Flame Spray, Use of 2-110
Coatings, Conductive, Polyurethane, Copper
  Filled, Use of 2-99
Coatings, Top, Aliphatic Polyurethane,
  Use of 2-102
Collective Adjustable Tube Assembly
  Remove/Install 11-136
Collective Adjustable Tube Assembly Clevis
  Remove/Install 11-138
Collective and Cyclic Actuator Mount Bushings
  Remove/Install 11-149
Collective Boosted Bellcrank Assembly (AVIM)
  Clean, Inspect, and Repair 11-153
Collective Boosted Bellcrank Assembly
  Remove/Install 11-151
Collective Control Input Valve Bellcrank Assembly
  Clean, Inspect, and Repair 11-178
  Remove/Install 11-176
Collective Control Link Assembly
  Clean, Inspect, and Repair 11-142
  Remove/Install 11-140
Collective Control Panel Assembly Integrally
  Lit Panel, Remove/Install 11-124
Collective Controls 11-31
  Clean, Inspect, and Repair 11-36
Collective Controls Binding K-753
Collective Controls Feel Loose K-752
Collective Elbow Assembly, Copilot
  Remove/Install 11-125
Collective Elbow Assembly Bushing,
  Copilot, Remove/Install 11-132
Collective Elbow Assembly Insert, Copilot,
  Remove/Install 11-131
Collective Elbow Assembly, Pilot
  Remove/Install 11-121

SUBJECT PAGE

C (Cont)

Collective Friction Clamp
  Clean, Inspect, and Repair 11-87
Collective Friction Knob and Shaft
  Remove/Install........................... 11-171
Collective Friction Knob and Shaft Pin
  Remove/Install........................... 11-173
Collective Hydraulic Actuator
  Remove/Install........................... 7-105
Collective Jackshaft
  Clean, Inspect, and Repair 11-75
Collective Jackshaft Adjustment Nut
  Remove/Install........................... 11-77
Collective Jackshaft Assembly
  Remove/Install........................... 11-72
Collective Jackshaft Friction Adjustment
  Bearing, Remove/Install 11-78
Collective Jackshaft Shim and Spacer
  Remove/Install........................... 11-79
Collective Jackshaft Spacer
  Clean, Inspect, and Repair 11-81
Collective Jackshaft Support Clamp
  Remove/Install........................... 11-84
Collective Jackshaft Tube Assembly
  Remove/Install........................... 11-83
Collective Mixing Lever Assembly
  Remove/Install........................... 11-133
Collective Mixing Lever Assembly, Bushings
  Remove/Install........................... 11-135
Collective Pitch Link Assembly
  Clean, Inspect, and Repair 11-47
  Remove/Install........................... 11-45
Collective Pitch System, Rig 11-3
Collective Plate Assembly, Remove/Install . 11-174
Collective Stick Assembly Miscellaneous
  Parts, Pilot
  Remove/Install........................... 11-93
Collective Stick Assembly, Pilot
  Remove/Install........................... 11-89
Collective Stick Control Panel Box, Pilot
  Clean, Inspect and Repair 11-97
Collective Stick Detent Button, Pilot
  Clean, Inspect and Repair 11-101
Collective Stick Elbow Assembly, Copilot
  Clean, Inspect, and Repair 11-129
Collective Stick Elbow Assembly, Pilot
  Clean, Inspect, and Repair 11-107
Collective Stick Inner Tube Assembly, Pilot
  Clean, Inspect, and Repair 11-109

SUBJECT PAGE

C (Cont)

Collective Stick Outer Tube Assembly, Pilot
  Clean, Inspect, and Repair 11-105
Collective Stick Ring Gears, Pilot 11-111
Collective Stick Throttle Arm, Copilot
  Clean, Inspect, and Repair 11-127
Collective Stick Throttle Arm, Pilot
  Clean, Inspect, and Repair 11-113
Collective Stick Throttle Friction Plug, Pilot
  Clean, Inspect, and Repair 11-99
Collective Stick Throttle Grip Assembly, Pilot
  Clean, Inspect, and Repair 11-103
Collective Stick Tiedown Strap
  Remove/Install........................... 11-43
Collective Transducer
  Remove/Install........................... 11-57
Collective Transducer Wiring/Connection
  (Typical), Repair 11-61
Combat Damaged Fuel Cells E-23
Combining Bellcrank Bearing Sleeve
  (AVIM), Remove/Install 11-412
Common Name, Names and Designations 1-2
  Nomenclature Cross-Reference List......... 1-2
Compass, Standby
  Clean, Inspect, and Repair 8-92
  Operational Check 8-89
  Remove/Install........................... 8-94
Component Inspection 11-486
Components, Avionic Cooling System
  Clean, Inspect, and Repair 9-476
Components Involved in an Accident.......... E-1
Components of Anti-Backlash Adapter
  Assembly 6-124
Components of Freewheeling Unit (AVIM)
  Clean, Inspect, and Repair 6-179
Components of Main Rotor Mast Assembly
  (AVIM).................................. 6-143
Components of Shaft and Bearing
  Hanger Assembly
  Clean, Inspect, and Repair 6-238
Components of Torquemeter Support and
  Bearing Assembly (AVIM)
  Clean, Inspect, and Repair 6-102
Conditioning Unit and Chain (TAMS), Signal
  Clean, Inspect, and Repair 9-463
Conditioning Unit (Mast Torque), Signal
  Clean, Inspect, and Repair 9-459
  Install 9-462
  Remove 9-461

SUBJECT PAGE

C (Cont)

Conditioning Unit (TAMS), Signal
  Install 9-466
  Remove 9-465
Conductive Coatings, Polyurethane,
  Copper Filled, Use of 2-99
Connect/Disconnect Battery 9-199
Connections, Searchlight Electrical
  Clean/Tighten 9-286
Connector Beneath CPO Switch, Electrical
  Remove/Install........................... 9-450
Connector, DC External Power
  Clean, Inspect, and Repair 9-220
  Remove/Install........................... 9-222
Connector on Digital Fuel Control Panel,
  Integrally Lit Panel, Remove/Install........ 9-333
Connector (Typical), Electrical, of Standpipe
  Electrical Assembly, Replace 6-90
Console Dimming Control Causes Panels
  to Dim When Shaft is Turned Clockwise ... K-525
Console Lights — Operational Check........ 9-158
Console or Instrument Dimming Control
  Remove/Install........................... 9-371
Console, Overhead, Lower 9-307
Console, Overhead, Raise 9-309
Control Cable, Heater
  Clean, Inspect, and Repair 13-17
  Remove/Install........................... 13-15
Control Cable, Vent
  Clean, Inspect, and Repair 13-38
  Remove/Install........................... 13-36
Control, Console or Instrument Dimming
  Remove/Install........................... 9-371
Control Display System (CDS) Fault
  Detection Locator System/Built-In
  Test (FDLS/BIT) — Operational Check 9-38
Control Display System (CDS) Interface —
  Operational Check......................... 9-30
Control, Electronic Supervisory
  Clean, Inspect, and Repair 9-454
  Install 9-457
  Remove 9-456
Control Knob, Multiparameter Display BRT
  Remove/Install............................ 8-8
Control Knob on Overhead Console
  (Typical), Lighting
  Remove/Install........................... 9-316
Control, Overload Sensing
  Clean, Inspect, and Repair 9-225
  Remove/Install........................... 9-227

SUBJECT PAGE

C (Cont)

Control Panel Assembly Integrally Lit
  Panel, Collective 11-124
Control Panel, Digital Fuel
  Install 9-329
  Remove 9-328
Control Panel, SCAS
  Install 9-339
  Remove 9-338
Control Support Assembly
  Remove/Install................ 11-164, 11-277
Control Support Assembly Bushings (AVIM)
  Remove/Install........................... 11-160
Control Systems, Environmental............. 13-1
Control Unit, AC External Power
  Clean, Inspect, and Repair 9-261
  Remove/Install........................... 9-263
Control Unit, Alternator
  Clean, Inspect, and Repair 9-253
  Remove/Install........................... 9-255
Control Unit, Fuel Quantity
  Remove/Install........................... 9-436
Control Valve, Temperature (Engine Oil System)
  Clean, Inspect, and Repair 6-359
  Remove/Install........................... 6-357
  Controls, Adjustable Tube Assembly 11-269
Controls, Flight............................ 11-1
Controls, Rotating, Main Rotor 5-158
Cooling System Blower, Avionic
  Install 9-484
  Remove 9-481
Cooling System Components, Avionic
  Clean, Inspect, and Repair 9-476
Cooling System Flexible Air Duct
  Coupling, Avionic, Remove/Install 9-490
Cooling System Motor Intake Duct
  Assembly, Avionic, Remove/Install 9-487
Cooling System Thermo Switch (Typical),
  Avionic, Remove/Install 9-488
Copilot Collective Elbow Assembly
  Remove/Install........................... 11-125
Copilot Collective Elbow Assembly
  Bushing, Remove/Install.................. 11-132
Copilot Collective Elbow Assembly
  Insert, Remove/Install 11-131
Copilot Collective Grip Assembly
  Clean, Inspect, and Repair 11-64
Copilot Collective Stick Assembly
  Remove/Install............................ 11-71

SUBJECT PAGE

C (Cont)

Copilot Collective Stick Assembly
Plug, Remove/Install 11-62
Copilot Collective Stick Elbow
Assembly, Clean, Inspect, and Repair 11-129
Copilot Collective Stick Inner Tube
Assembly, Clean, Inspect, and Repair 11-67
Copilot Collective Stick Outer Tube
Assembly, Clean, Inspect, and Repair 11-69
Copilot Collective Stick Throttle Arm,
Clean, Inspect, and Repair 11-127
Copilot Collective Stick Tube
Assemblies, Remove/Install 11-63
Copilot Cyclic Stick, Remove/Install 11-334
Copper Filled Polyurethane Conductive
Coatings, Use of 2-99
Corner Mount, Clean and Inspect 2-298
Corner Mount, Stop Nut and/or Stop-Down
Assembly, Remove/Install 2-283
Corrosion Treatment — Searchlight 9-287
Coupling, Avionic Cooling System
Flexible Air Duct, Remove/Install 9-490
Coupling Disc Pack (Typical)
Remove/Install 6-229
Cover and Chain (TAMS) Signal Conditioning
Unit, Remove/Install 9-467
Cover, Tail Rotor Driveshaft
Clean, Inspect, and Repair 2-234
Remove/Install 2-231
Covers, Helicopter, Install 1-89
Cowl Assembly, Engine
Clean, Inspect, and Repair 2-60
Remove/Install 2-58
CPO Channel Select Panel is Not Lit
After INST LT Control is Turned
From OFF to BRT K-492
CPO Channel Select Switch
Remove/Install 9-437
CPO Cyclic Stick Fitting Assembly
Clean, Inspect, and Repair 11-348
CPO Cyclic Stick Fitting Assembly
Bearings (AVIM)
Remove/Install 11-350
CPO Cyclic Stick Gimble Assembly
Clean, Inspect, and Repair 11-345
CPO Cyclic Stick Gimble Assembly
Bushing (AVIM)
Remove/Install 11-347

SUBJECT PAGE

C (Cont)

CPO Cyclic Stick Gimble, Fitting, Plate,
and Support Assemblies
Remove/Install 11-338
CPO Cyclic Stick Housing Assembly
Clean, Inspect, and Repair 11-380
CPO Cyclic Stick Housing Assembly
Bearings (AVIM)
Remove/Install 11-382
CPO Cyclic Stick Link Assembly
Clean, Inspect, and Repair 11-372
CPO Cyclic Stick Plate Assembly
Clean, Inspect, and Repair 11-358
CPO Cyclic Stick Plate Assembly Bearing
(AVIM)
Remove/Install 11-360
CPO Cyclic Stick Quick-Disconnect Lever
and Link Assembly
Remove/Install 11-366
CPO Cyclic Stick Quick-Disconnect Lever
Assembly
Clean, Inspect, and Repair 11-368
CPO Cyclic Stick Quick-Disconnect Lever
Bushings (AVIM)
Remove/Install 11-370
CPO Cyclic Stick Socket Housing, and
Housing Assembly
Remove/Install 11-376
CPO Cyclic Stick Socket Housing Assembly
Clean, Inspect, and Repair 11-384
CPO Cyclic Stick Socket Housing
Bushings (AVIM)
Remove/Install 11-386
CPO Cyclic Stick Stud
Clean, Inspect, and Repair 11-364
CPO Cyclic Stick Stud Assembly
Remove/Install 11-362
CPO Cyclic Stick Support Assembly
Clean, Inspect, and Repair 11-354
CPO Cyclic Stick Support Assembly
Bearing (AVIM)
Remove/Install 11-356
CPO Cyclic Stick Tube Assembly
Clean, Inspect, and Repair 11-390
Remove/Install 11-388
CPO Intercommunication System (ICS)
Panel is Not Lit After INST LT
Control is Turned From OFF to BRT K-498

SUBJECT PAGE

C (Cont)

CPO Multifunction Display (MFD) Auxiliary Switch Panel is Not Lit After INST LT Control is Turned From OFF to BRT K-493
CPO Night Vision Goggles (NVG) Do Not Come On When NVG Power Supply Switch is Set to ON) K-289
Crew Door
Clean, Inspect, and Repair 2-179
Remove/Install 2-27
Crew Door Jettison Mechanism
Clean, Inspect, and Repair 2-31
Remove/Install 2-29
Crew Door, Window in
Remove/Install 2-183
Crew Seat and Floor Panel
Remove/Install 2-47
Cross-Reference, Nomenclature List 1-2
Crosstube, Aft
Clean, Inspect, and Repair 3-35
Remove/Install 3-34
Crosstube, Forward
Clean, Inspect, and Repair 3-24
Remove/Install 3-23
Crosstube Components, Aft
Clean, Inspect, and Repair 3-41
Remove/Install 3-37
Crosstube Components, Forward
Clean, Inspect, and Repair 3-32
Remove/Install 3-28
Crosstube Deflection, Inspect Landing Gear for 3-4
Crosstube Strap, Forward
Clean, Inspect, and Repair 3-6
Crosstube Support Assembly, Aft
Clean, Inspect, and Repair 3-8
Crosstube Support Beam and Components, Aft
Clean, Inspect, and Repair 3-45
Remove/Install 3-43
Crosstube Support Beam Bushings, Aft (AVIM), Remove/Install 3-47
Cyclic, Collective and Directional Control Servoactuators (Typical),
Clean, Inspect, and Repair 7-91
Cyclic Control System 11-182
Cyclic Controls Binding K-755
Cyclic Controls Feel Loose K-754
Cyclic Controls, Rig 11-15

SUBJECT PAGE

C (Cont)

Cyclic Friction Knob and Shaft
Clean, Inspect, and Repair 11-238
Install 11-240
Remove 11-237
Cyclic Hydraulic Actuator
Remove/Install 7-108
Cyclic Mixer Bellcrank Assembly (AVIM)
Clean, Inspect, and Repair 11-252
Cyclic Mixer Bellcrank Assembly
Remove/Install 11-243
Cyclic Mixer Bellcrank Assembly and Rod End Bearing
Clean, Inspect, and Repair 11-250
Cyclic Mixer Bellcrank Assembly Clevis
Clean, Inspect, and Repair 11-247
Cyclic Stick Pivot Bearing Retainer
Clean, Inspect, and Repair 11-284
Cyclic Torque Tube
Clean, Inspect, and Repair 11-215
Install 11-218
Remove 11-212
Cyclic Transducer Spacer
Clean, Inspect, and Repair 11-290
Cyclic Yoke
Clean, Inspect, and Repair 11-228

D

Data G-1
Loading G-11
Weight and Balance G-1
Data Bus Coupler or Terminator
Clean, Inspect, and Repair 9-427
Data Bus Coupler or Terminator (Typical)
Remove/Install 9-429
Data, Equipment 1-7
DC External Power 9-89
DC External Power Connector
Clean, Inspect, and Repair 9-220
Remove/Install 9-222
DC External Power Door Switch
Clean, Inspect, and Repair 9-210
Remove/Install 9-211

SUBJECT PAGE

D (Cont)

DC GEN FAIL Message Not Displayed on MFD (DC GEN Switch Set to OFF and Engine RPM at 100%) K-120
DC Generator Does Not Go Off Line (RPM Below Flight Idle) K-269
Defogging Blower, Remove/Install 13-34
Defuel Helicopter
  (Using Defueling Truck) 1-46
  (Using Defueling Valve) 1-44
Defuel Valve
  Clean, Inspect, and Repair 10-48
  Remove/Install 10-46
Depreservation E-6
  After Flyable Storage E-6
  After Short Term Storage E-13
Destruction of Army Material to Prevent Enemy Use 1-2
Detector, Lower Chip, Remove/Install 6-72
Detector, Upper Chip, Remove/Install 6-66
Differences Between Models 1-6
Differential Transformer (LVDT), TAMS Linear Variable
  Clean, Inspect, and Repair 9-468
  Remove/Install 9-470
Digital and Analog Instruments 1-37
Digital Fuel Control Panel
  Install 9-329
  Remove 9-328
Digital Fuel Control Panel Not Lit After CONSOLE LT Control is Turned From OFF to BRT K-511
DIGITAL Test Switch Does Not Cause Engine Deceleration When Pressed K-464
Dimming Control, Console or Instrument Remove/Install 9-371
Dimming Resistor, Position Light
  Install 9-283
  Remove 9-282
Diode, Remove/Install 9-367
Directional Control Actuator Input Idler Assembly Remove/Install 11-447
Directional Control Adjustable Tube Bearing (Typical), Remove/Install 11-446
Directional Control Aft Walking Beam Bearing (AVIM), Remove/Install 11-477
Directional Control Aft Walking Beam, Remove/Install 11-474
Directional Control Boosted Tube, Remove/Install 11-471

SUBJECT PAGE

D (Cont)

Directional Control Combining Bellcrank, Remove/Install 11-409
Directional Control Eyebolt And Spring, Remove/Install 11-413
Directional Control Force Gradient,
  Clean, Inspect, and Repair 11-456
  Remove/Install 11-454
Directional Control Force Gradient Bearing and Sleeve, Remove/Install 11-458
Directional Control Force Gradient Spring, Guides, or Shaft, Remove/Install 11-463
Directional Control Force Gradient Switch (AVIM), Remove/Install 11-460
Directional Control Forward Walking Beam, Remove/Install 11-442
Directional Control Lower Aft Horizontal Tube, Remove/Install 11-427
Directional Control Lower Forward Horizontal Tube, Remove/Install 11-415
Directional Control Lower Tunnel Bellcrank, Remove/Install 11-430
Directional Control Lower Tunnel Bellcrank Bushing, Remove/Install 11-432
Directional Control Nonboosted Tube, Remove/Install 11-444
Directional Control Pedal Adjustment and Support Assembly,
  Clean, Inspect, and Repair 11-398
  Remove/Install 11-395
Directional Control Pedal Bellcrank, Remove/Install 11-405
Directional Control Pedal Bearing (AVIM), Remove/Install 11-402
Directional Control Pedal Bellcrank Bushing and Bearing (AVIM), Remove/Install 11-406
Directional Control Pedal Tube, Remove/Install 11-407
Directional Control Pedals, Clean, Inspect, and Repair 11-399
Directional Control Pedals From Support Assembly, Remove 11-397
Directional Control Pedals In Support Assembly, Install 11-404
Directional Control Pedals Motoring (Creep) K-757
Directional Control Rotary Actuator,
  Clean, Inspect, and Repair 11-469
  Remove/Install 11-466

SUBJECT PAGE

D (Cont)

Directional Control Servoactuator, Remove/Install 7-88
Directional Control Servoactuator Support Remove/Install 11-451
Directional Control Tailboom Tube 11-479
Directional Control Transducer, Remove/Install 11-424
Directional Control Transducer Bellcrank and Support, Remove/Install 11-418
Directional Control Upper Horizontal Tube, Remove/Install 11-437
Directional Control Upper Tunnel Bellcrank, Remove/Install 11-435
Directional Control Vertical Tube, Remove/Install 11-433
Directional Controls 11-392
Directional Controls Binding K-758
Directional Controls Feel Loose K-756
Directional Controls, Rig 11-24
Directional Gyro Control Panel is Not Lit After CONSOLE LT Control is Turned From OFF to BRT K-515
Disassemble
  Engine 4-34
  Main Rotor Mast Assembly (AVIM) 6-138
  Mixing Valve 13-3
  Multiparameter Display (MPD) (AVIM) 8-11
  Swashplate and Support (AVIM) 5-251
  Tail Rotor Assembly 5-359
  Tail Rotor Hub (AVIM) 5-379
Disassemble/Assemble
  Dual Tachometer (AVIM) 8-27
  Ground Handling Wheels 1-222
  Jib Hoist 1-107
  Oil Tank 4-72
  TGT/TRQ Indicator (AVIM) 8-19
Disc Pack Assemblies, Inspect 6-231
Disc Pack (Typical), Coupling, Remove/Install 6-229
Disconnect/Connect Battery 9-199
Door Switch, AC External Power,
  Clean, Inspect, and Repair 9-234
  Remove/Install 9-236
Door Switch, DC External Power,
  Clean, Inspect, and Repair 9-210
  Remove/Install 9-211
Doors and Center Post Duct,
  Clean, Inspect, and Repair 2-114
  Remove/Install 2-112

SUBJECT PAGE

D (Cont)

Doppler Radar Bit J-9
Drain, Cabin Roof,
  Clean, Inspect, and Repair 2-176
Drain/Service
  Engine Oil System 1-49
  Hydraulic System 1-58
  Tail Rotor Gearbox 1-57
  Transmission Oil and Filter 1-53
Drive Ring Set (AVIM), Remove/Install 5-89
Drive Train System K-1
  Identification of Foreign Material in 6-16
  Troubleshooting K-1
Driveshaft
  Engine to Transmission, Inspect 6-20
  Vibration in Tail Rotor K-12
Driveshaft Cover, Tail Rotor,
  Clean, Inspect, and Repair 2-234
  Remove/Install 2-231
Droop Compensator Potentiometer Arm,
  Clean, Inspect, and Repair 11-146
Droop Stop Plugs, Main Rotor
  Clean, Inspect, and Repair 5-34
  Remove/Install 5-29
Droop Stop Studs, Main Rotor
  Clean, Inspect, and Repair 5-42
  Remove/Install 5-37
Dual Tachometer (AVIM),
  Clean, Inspect, and Repair 8-29
Dual Tachometer, Remove/Install 8-26
  Disassemble/Assemble 8-27
Dual Tachometer Does Not Function Properly with MPD Operating Normally K-28
Dual Tachometer is Not Lit After INST LT Control is Turned From OFF to BRT K-500
Duct Assembly, Avionic Cooling System
  Motor Intake, Remove/Install 9-487
Duct, Center Post, and Doors,
  Clean, Inspect, and Repair 2-114
  Remove/Install 2-112
Duct Coupling, Avionic Cooling System
  Flexible Air, Remove/Install 9-490
Duct, Oil Cooler
  Clean, Inspect, and Repair 6-369
  Remove/Install 6-368
Ducts, Heating and Ventilation System,
  Clean, Inspect, and Repair 13-18
  Remove/Install 13-21

SUBJECT PAGE

E

Electrical Assembly, Standpipe,
 Install 6-86
 Remove 6-81
Electrical Connections in Overhead Console and Center Post Circuit Breaker Panel (Typical), Inspect 9-324
Electrical Connections, Searchlight,
 Clean/Tighten 9-286
Electrical Connector Beneath CPO Switch, Remove/Install 9-450
Electrical Connector of Standpipe Electrical Assembly 6-90
Electrical Equipment, Miscellaneous,
 Clean, Inspect, and Repair 9-300
Electrical Power
 OFF 9-208
 ON 9-204
Electrical Wiring and Cabling in Avionics Compartment,
 Install 10-84
 Remove 10-77
Electronic Supervisory Control, Engine,
 Clean, Inspect, and Repair 9-454
 Install 9-457
 Remove 9-456
Emergency Equipment 17-1, E-25
Engage Switch, SCAS Pitch and Roll,
 Remove/Install 9-342
Engage Switch, SCAS Yaw,
 Remove/Install 9-344
Engine E-9
 Intermediate Storage E-17
 Short Term Storage E-9
Engine Anti-Ice Valve Does Not Open (No Rise in TGT) When ENG ANTI-ICE Switch is Set to ENG ANTI-ICE and Helicopter at Idle RPM K-358
Engine, Assemble 4-40
Engine Assembly
 Install 4-15
 Remove 4-2
Engine Control Cable Bellows Assembly,
 Remove/Install 4-124
Engine Cowl Assembly
 Clean, Inspect, and Repair 2-60
 Remove/Install 2-58
Engine Cowl Assembly Side Panel
 Clean, Inspect, and Repair 2-64
 Remove/Install 2-63
Engine, Disassemble 4-34

SUBJECT PAGE

E (Cont)

Engine Droops During Increase in Collective K-718
Engine Electronic Supervisory Control,
 Clean, Inspect, and Repair 9-454
 Install 9-457
 Remove 9-456
Engine Igniter Does Not Fire K-388
Engine Mount Legs,
 Clean and Inspect 4-147
 Remove/Install 4-136
Engine Mount Trunnion,
 Clean, Inspect, and Repair 4-144
Engine Mounts 4-135
Engine NG RPM Indicator (Digital) on MPD Does Not Indicate Approximately 85% (Helicopter at 100% RPM and DC Generator On) K-453
Engine NG RPM Indicator (Vertical Scale) Does Not Indicate Approximately 80% (Helicopter at 100% RPM and DC Generator On) K-438
Engine NG RPM indicator (Digital) on MPD Does Not indicate Approximately 64% (Helicopter at Flight Idle and DC Generator On) K-429
Engine NP RPM Indicator (Digital) on MPD Does Not Indicate Approximately 62% (Helicopter at Flight Idle and DC Generator On) K-426
Engine NP RPM Indicator (Digital) on MPD Does Not Indicate Approximately 100% (Helicopter at 100% RPM and DC Generator On) K-450
Engine NP RPM Indicator (Vertical Scale) Does Not Indicate Approximately 62% (Helicopter at Flight Idle and DC Generator On) K-409
Engine NP RPM Indicator (Vertical Scale) Does Not Indicate Approximately 100% (Helicopter at 100% RPM and DC Generator On) K-435
Engine Oil Bypass Relay Not Actuated (No Voltage on 1TB1-3) (1TB1-1 Jumpered to Ground and ENG OIL BYPASS Switch to AUTO) K-521
Engine Oil Bypass Valve Will Not Go to Bypass Position (1TB1-1 Temporarily Jumpered to Ground and ENG OIL BYPASS Switch Set to AUTO) K-372

SUBJECT PAGE

E (Cont)

Engine Oil Pressure Indicator on MPD Does Not Indicate in Green Range (Helicopter at Flight Idle and DC Generator On) K-420
Engine Oil Pressure Indicator on MPD Does Not Indicate in Green Range (Helicopter at 100% RPM and DC Generator On) K-444
Engine Oil Pressure Transmitter Check 4-28
Engine Oil Service Door on Aft Fairing Assembly 2-70
Engine Oil System 4-68
  Drain/Service 1-49
Engine Oil Temperature Indicator Does Not Indicate in Green Range (Helicopter at Flight Idle and DC Generator On) K-417
Engine Oil Temperature Indicator Does Not Indicate in Green Range (Helicopter at 100% RPM and DC Generator On) K-441
Engine, Rotor, and Transmission Instruments 8-2
  Clean and Inspect 8-7
  Operational Check 8-3
Engine Scavenge Oil Filter Assembly Remove/Install 4-98.2
Engine Scavenge Oil Filter Element Remove/Install 4-98
Engine TGT Indicator Does Not Indicate in Green Range (Helicopter at Flight Idle and DC Generator On) K-423
Engine TGT Indicator Does Not Indicate in Green Range (Helicopter at 100% RPM and DC Generator On) K-447
Engine to Transmission Alignment, Perform 4-152
Engine to Transmission Driveshaft
  Clean, Inspect, and Repair 6-26
  Remove/Install 6-21
Engine Torque Indicator (Digital) on MPD Does Not Indicate Approximately 8% (Helicopter at Flight Idle and DC Generator On) K-432
Engine Torque Indicator (Digital) on MPD Does Not Indicate Approximately 24% (Helicopter at 100% RPM and DC Generator On) K-456
Engine Vent and Fuel Supply Hoses
  Fabricate 10-27
  Remove/Install 10-21

SUBJECT PAGE

E (Cont)

Environmental Control Systems 13-1
Environmental Electrical System — Operational Check 9-76
Equipment
  Avionics Installed 18-1
  Digital and Analog 1-37
  Emergency 17-1, E-25
  Mission 1-35, 16-1
Equipment Characteristics, Capabilities and Features 1-4
Equipment Configuration 1-8
Equipment Data 1-7
Equipment Description 1-4
Equipment List (Electrical) F-9
  Tools and Test B-5
  Wiring Diagrams F-1
Equipment, Miscellaneous Electrical, Clean, Inspect, and Repair 9-300
Error Code 0001 Word 1 Right MCPU Fail K-599
Error Code 0002 Word 1 Left MCPU Fail K-560
Error Code 0040 Word 1 Yaw Actuator Fail K-561
Error Code 0080 Word 1 Right Cyclic Actuator Fail K-577
Error Code 0010 Word 1 Left Cyclic Actuator Fail K-594
Error Code 0200 Word 1 Pitch Rate Gyro Failure K-608
Error Code 0040 Word 1 Roll Rate Gyro Failure K-612
Error Code 0800 Word 1 Yaw Rate Gyro Failure K-616
Error Code 1000 Word 1 Forward/Aft Cyclic Control Motion Transducer Failure K-623
Error Code 2000 Word 1 Lateral Cyclic Control Motion Transducer Failure K-629
Error Code 4000 Word 1 Pedal Control Motion Transducer Failure K-635
Error Code 8000 Word 1 Collective Motion Transducer Failure K-644
Error Code 0008 Word 2 Trim Motor Failure K-653
Error Code 0010 Word 2 26 VAC Failure K-668
Exhaust System 4-64
Expandable Blade Bolt,
  Clean, Inspect, and Repair 5-25
  Remove/Install 5-21

SUBJECT PAGE SUBJECT PAGE

E (Cont)

Expendable Supplies and Materials List D-1
  Explanation of Columns.................... D-1
  Scope D-1
External AC Power Comes On, But No
  Indication Above ACV on MPD K-127

SUBJECT PAGE

E (Cont)

- External DC Power Comes On, But No Indication Above BATT V on MPD K-128
- External DC Power Does Not Come On K-121
- External DC Power Does Not Disconnect When DC Generator is Turned On K-126
- External DC Power On, But No Voltage Present On BATTERY EMERGENCY BUS ... K-130
- External Power
  - AC — Operational Check 9-83
  - Apply AC 1-105
  - Apply 28 VDC 1-103
  - DC — Operational Check 9-89
- External Power Connector, DC
  - Clean, Inspect, and Repair 9-220
  - Remove/Install 9-222
- External Power Control Unit, AC
  - Clean, Inspect, and Repair 9-261
  - Remove/Install 9-263
- External Power Door Switch, AC
  - Clean, Inspect, and Repair 9-234
  - Remove/Install 9-236
- External Power Door Switch, DC
  - Clean, Inspect, and Repair 9-210
  - Remove/Install 9-211
- External Power Receptacle, AC
  - Clean, Inspect, and Repair 9-238
  - Remove/Install 9-240
- External Power Reset Switch, AC
  - Clean, Inspect, and Repair 9-243
  - Remove/Install 9-244
- Eyebolt
  - Clean, Inspect, and Repair 3-21
  - Remove/Install 3-20

F

- Fabricate Engine Vent and Fuel Supply Hoses 10-27
- Fairing Assembly, Aft
  - Clean, Inspect, and Repair 2-68
  - Remove/Install 2-67
- Fairing Assembly, Forward
  - Clean, Inspect, and Repair 2-53
  - Remove/Install 2-52
- Fairleads, Tailboom,
  - Inspect, Remove, and Install 2-218

SUBJECT PAGE

F (Cont)

- Fan Shaft Assembly
  - Install 6-265
  - Remove 6-248
- Fan Shaft Bearing Hanger Brackets (Forward and Aft)
  - Clean, Inspect, and Repair 6-271
  - Remove/Install 6-268
- Fan Shaft and Blower Housing Bearing Hanger, Bearing, Impeller
  - Clean, Inspect, and Repair 6-257
  - Remove/Install 6-251
- Fault Detection Location System (FDLS)
  - Failure Codes J-1
  - AHRS Bit J-7
  - ATHS Bit J-9
  - Audio Distribution Unit (ADU) Bit J-11
  - Built-In Test J-1
  - CDS Bit J-8
  - Doppler Radar Bit J-9
  - FDLS Failure Codes J-1
  - Fuel Control Bit J-7
  - HF Radio Bit J-12
  - Last Flight Recall J-5
  - Mast Torque Bit J-12
  - MMS Bit J-10
  - Radar Altimeter Bit J-10
  - SCAS Bit J-12
  - Transmission Attitude Measurement Subsystem (TAMS) Bit J-11
- FDL MENU Page Appears in Flight K-728
- FDL MENU Page Will Not Appear K-716
- Filter and Oil, Transmission
  - Drain/Service 1-53
- Filter Assembly, Hydraulic
  - Remove, Clean, Inspect, Repair, and Install 7-15
- Filter Elements, Replace 7-19
- Filter, Oil Manifold
  - Clean, Inspect, and Repair 6-330
  - Remove/Install 6-326
- Fin Assembly
  - Clean, Inspect, and Repair 2-240
  - Remove/Install 2-267
  - Repair Minor Puncture Damage and Rebonding of Sleeve to (AVIM) 2-252
- Fin Bumper and Pin, Vertical,
  - Remove/Install 2-258
- Fin, Repair Touch Up 2-265
- Fin Skin Voids (AVIM), Repair 2-260

SUBJECT PAGE

F (Cont)

Fire Extinguisher
 Remove, Inspect, and Install 17-2
First Aid Kit
 Remove, Inspect, and Install 17-3
First Aid Kit and Fire Extinguisher 17-1
Fittings, Attach Tailboom/Aft Fuselage
 Clean, Inspect, and Repair 2-203
Fittings, Tow
 Clean, Inspect, and Repair 3-49
 Remove/Install 3-48
Flame Spray Coating (AVIM), Use of 2-110
Flasher, Anticollision Light
 Install 9-274
 Remove 9-272
Flex Hose (Typical), Remove/Install 7-26
Flexframes, Wear of at Bolted Joints (Engine to Transmission Drive Shaft) and/or Abnormal Fretting K-11
Flexible Air Duct Coupling, Avionic Cooling System, Remove/Install 9-490
Flight Control Bellcranks, Idlers, and Walking Beams
 Clean, Inspect, and Repair 11-496
Flight Control Supports
 Clean, Inspect, and Repair 11-510
Flight Control Tubes
 Clean, Inspect, and Repair 11-487
Flight Controls 11-1
 Troubleshooting 11-1
Flight Instruments 8-61
Floodlight (Typical)
 Install 9-277
 Remove 9-276
Floodlights — Operational Check 9-151
Floor Panel and Crew Seat
 Remove/Install 2-47
Fluids, Approved, Table 1-3 1-64
Flush Contaminated Hydraulic System 7-80
Flyable Storage E-4
 Airframe E-5
 Depreservation After E-6
 Description E-4
 Fuel System E-5
 Hydraulic System E-5
 Maintenance of Preservation E-6
 Power Train E-4
Fold/Unfold Main Rotor Blades 1-74
Foldout Wiring Diagram Index F-56
Footswitch (Typical), Remove/Install 9-446

SUBJECT PAGE

F (Cont)

Force Gradient Tube Assembly
 Clean, Inspect, and Repair 11-206
Force Trim Switch, SCAS
 Remove/Install 9-347
Fore-and-Aft Cyclic Transducer
 Install 11-235
 Remove 11-233
Fore-and-Aft Force Gradient
 Clean, Inspect, and Repair 11-189
 Remove/Install 11-187
Fore-and-Aft Magnetic Brake
 Clean, Inspect, and Repair 11-198
 Remove/Install 11-196
Foreign Commercial Fuels, Approved, Table 1-1 1-62
Foreign Material in Power Train System 6-16
Forms and Charts, Instructions for Use of B-2, G-2
 Charts and Forms, Use of G-2
 Preliminary Weighing Instructions G-14
 Weighing Record G-6
Forward Crosstube
 Clean, Inspect, and Repair 3-24
 Remove/Install 3-23
Forward Crosstube Components
 Clean, Inspect, and Repair 3-32
 Remove/Install 3-28
Forward Crosstube Strap
 Clean, Inspect, and Repair 3-6
Forward Fairing Assembly
 Clean, Inspect, and Repair 2-53
 Remove/Install 2-52
Forward Fairing Assembly Seal
 Remove/Install 2-56
Forward Firewall 4-177
 Clean, Inspect, and Repair 4-184
Forward Firewall Assembly
 Remove/Install 4-178
Forward Firewall Seals 4-189
Forward Oil Seal Forward Seal Cap
 Replace 6-174
Forward Overhead Console Panel Not Lit After CONSOLE LT Control is Turned From OFF to BRT K-516
Forward Shaft Assembly
 Clean, Inspect, and Repair 6-221
 Remove/Install 6-219

SUBJECT PAGE

F (Cont)

Forward Transverse Beam
  Clean, Inspect, and Repair 2-312
Freewheeling Unit 6-167
  Install 6-213
  Remove 6-168
  Serviceability Check of 6-8
Freewheeling Unit (AVIM), Components of
  Clean, Inspect, and Repair 6-179
Freewheeling Unit Chip Detector Fuzz Burner Failure — Special Test Tool LED Does Not Flash When Test Switch is Set to ON K-340
Freewheeling Unit, Chips, Caution Message on MFD K-8
Freewheeling Unit Tail Rotor Drive Output Oil Seal (AVIM)
  Remove/Install 6-206
Freewheeling Unit Tail Rotor Drive Output Shaft Adapter Wear Sleeve (AVIM)
  Remove/Install 6-210
Freewheeling Unit Tail Rotor Output Shaft Support Bearing (AVIM)
  Remove/Install 6-208
Fuel Boost Pump Does Not Operate (FUEL BOOST Switch Set to FUEL BOOST) K-379
Fuel Boost Pump Does Not Operate When START SWITCH and KEYLOCK SWITCH are ON (FUEL BOOST SWITCH is in OFF Position) K-386
Fuel Cell (AVIM)
  Clean, Inspect, and Repair 10-64
Fuel Cell
  Remove/Install 10-38
Fuel Cell Support Assemblies
  Clean, Inspect, Repair and Replace 10-65
Fuel Cell Vent Hose
  Remove/Install 10-28
Fuel Cells, Combat Damaged E-23
Fuel Control Bit J-7
Fuel Control Clevis
  Remove/Install 4-131
Fuel Control Does Not Switch to Analog Backup K-461
Fuel Control Lever
  Remove/Install 4-128
Fuel Control Panel, Digital
  Install 9-329
  Remove 9-328

SUBJECT PAGE

F (Cont)

Fuel Differential Pressure Switch
  Clean and Inspect 4-134
  Remove/Install 4-133
Fuel Flow to Engine Driven Pump Restricted K-746
Fuel Low Quantity Indicator Inoperable K-749
Fuel Pressure Switch, Remove/Install 10-30
Fuel Probe, Remove/Install 10-32
Fuel Probe and Indicating System, Check 10-69
Fuel Quantity Control Unit,
  Remove/Install 9-436
Fuel Quantity Indicator Not Correct K-396
Fuel Quantity Readout On MFD Disagrees With Fuel Quantity Readout on Vertical Scale Instrument K-400
Fuel Shutoff Lever
  Clean, Inspect, and Repair 10-5
  Install 10-7
  Remove 10-3
Fuel Shutoff Valve
  Clean, Inspect, and Repair (AVIM) 10-15
  Remove/Install 10-12
Fuel Sump
  Clean, Inspect, and Repair 10-36
  Install 10-37
  Remove 10-34
Fuel Supply Hoses, Engine Vent
  Remove/Install 10-21
Fuel System 10-1, E-5
  Combat Damaged Fuel Cells E-23
  Flyable Storage E-5
  Intermediate Storage E-19
  Short Term Storage E-11
  Troubleshooting 10-2
Fuel System Hoses
  Clean, Inspect, and Repair 10-26
Fuels, Approved, Table 1-1 1-62
Fuels, Foreign Commercial, Approved, Table 1-1 1-62
Functional Groups B-4
Functions, Maintenance B-3
Fuse(s) (Typical), Multiparameter Display
  Remove/Install 8-8

SUBJECT PAGE

G

Gage, Sight, Remove/Install 6-75
Gear, Landing 3-1
Gearbox Support Assembly, Tail Rotor
  Clean, Inspect, and Repair 2-214
Gearbox, Tail Rotor
  Check Serviceability of 6-13
  Clean, Inspect, and Repair 6-296
  Drain/Service 1-57
  Remove/Install 6-291
General Information 1-2
Generator, AC
  Clean, Inspect, and Repair 9-246
  Install 9-250
  Remove 9-248
Generator Not Off Line at 18 Volts (Engine RPM is Being Reduced) K-132
Generator, Starter
  Clean, Inspect and Repair 9-214
  Remove/Install 9-216
Generator Will Not Come On Line (Reset Has Been Attempted) K-135
Generator Will Not Trip Off Line With Simulated Feeder Fault K-133
Glareshield, Instrument Panel
  Clean, Inspect, and Repair 8-35
  Remove/Install 8-33
Glossary Glossary-1
  Abbreviations Glossary-1
Gravity or Open Port Refueling (Power Off or Rapid) 1-42
Green and White FLOOD LT Control is Reversed When Turned From DIM to BRT K-477
Green Floodlight Does Not Come On K-474
Green Floodlight Does Not Go Off When FLOOD LT Switch is Set to WHITE K-478
Grip Bushings/Pins/Inserts (AVIM)
  Remove/Install 5-86
Grip Lead Lag, Bearings (AVIM)
  Remove/Install 5-74
Ground Handling, Jacking, Mooring, Hoisting, and Sling Loading 1-73
Ground Handling Wheels
  Clean, Inspect, and Repair 1-128
  Disassemble/Assemble 1-124
Ground Module (Typical)
  Remove/Install 9-406

SUBJECT PAGE

H

Hanger Supports, Tailboom Bearing
  Clean, Inspect, and Repair 2-224
  Remove/Install 2-229
Hard Points, Armament
  Inspect and Repair 2-178
Heat Mixing Valve 13-1
Heat Resistant and Structural Bonding Adhesive, Use of 2-106
Heater Control Cable
  Clean and Inspect 13-17
  Remove/Install 13-15
Heater Overheat Switch
  Remove/Install 9-379
Heater, Pitot Tube — Operational Check 8-82
Heater Solenoid Valve Will Not Close K-142
Heater Solenoid Valve Will Not Open K-145
Heating and Ventilation System Ducts
  Clean, Inspect, and Repair 13-18
  Remove/Install 13-21
Helicopter
  Jack 1-84
  Moor 1-87
  Sling Load 1-100
  Tow/Park 1-82
Helicopter Cleaning 1-60
Helicopter Covers, Install 1-89
Helicopter, Defuel
  (Using Defueling Truck) 1-46
  (Using Defueling Valve) 1-44
Helicopter Description, OH-58D 1-10
Helicopter, Hoisting
  With Main Rotor Hub and Blades Removed 1-98
  With Main Rotor Installed and MMS Installed or Removed 1-96
  With Mast Removed 1-94
Helicopter Inventory, Master Guide C-1
  Introduction C-1
  Inventoriable Items C-1
  Periods of Inventory C-2
  Security C-1
HF Radio Bit J-12
High Frequency Vibration K-9
High Oil Level in Engine With Low Oil Level in Transmission K-2
Hinge Halves, Quick-Disconnect Pin and Lanyard for Access Door,
  Clean, Inspect, and Repair 2-19

SUBJECT PAGE

H (Cont)

Hoist and Winches 14-1
Hoisting Helicopter
  With Main Rotor Hub and Blades Removed. 1-98
  With Main Rotor Installed and MMS
    Installed or Removed 1-96
  With Mast Removed 1-94
Honeycomb Panels (Typical)
  Clean, Inspect, and Repair 2-131
Horizontal Stabilizer
  Clean, Inspect, and Repair 2-269
  Remove/Install.......................... 2-273
Hose, Fuel Cell Vent
  Remove/Install.......................... 10-28
Hose, Tube, or Packing (Typical)
  Remove/Install.......................... 4-91
Hoses, Fuel System
  Clean, Inspect, and Repair 10-26
Hoses, Fuel Supply, and Engine Vent,
  Fabricate 10-27
HOT BATT 1 & 2 Message Not Displayed
  on MFD K-150
HOT BATT 1 & 2 Message Not Displayed
  on MFD (External Power and Jumper Between
  Pins 1 & 2 of Connector 2BT1P2)..........K-149
HOT BATT 2 Message Not Displayed
  on MFD K-151
How to Use This Manual........................ iv
Hub and Blades, Tail Rotor 5-338
Hub Shear Bearings, Main Rotor (AVIM)
  Remove/Install.......................... 5-61
Hydraulic Actuator, Collective
  Remove/Install..........................7-105
Hydraulic Actuator, Cyclic
  Remove/Install..........................7-108
Hydraulic Filter Assemblies 7-14
Hydraulic Filter Assembly
  Remove, Clean, Inspect, Repair,
    Install 7-15
Hydraulic Hoses
  Clean, Inspect, and Repair 7-29
Hydraulic Hoses, Lines, Fittings and
  Quick-Disconnects 7-22
Hydraulic Pressure Indicates Low
  During Normal Operation (Caution Low
  HYD PRESS) K-18
Hydraulic Pressure Switch
  Clean, Inspect, and Repair 7-37
Hydraulic Pump
  Clean, Inspect, and Repair 7-78
  Remove/Install.......................... 7-74

SUBJECT PAGE

H (Cont)

Hydraulic Reservoir
  Clean, Inspect, and Repair 7-71
Hydraulic Reservoir Assembly
  Remove/Install.......................... 7-58
Hydraulic Reservoir Cover Latch Assembly
  Remove/Install.......................... 7-63
Hydraulic Reservoir Cover, Pin and
  Cap Gasket
  Remove/Install.......................... 7-61
Hydraulic Reservoir Return Port Union,
  Remove/Install.......................... 7-65
Hydraulic Reservoir Screen
  Remove/Install.......................... 7-70
Hydraulic Reservoir Sight Plug
  Remove/Install.......................... 7-67
Hydraulic Reservoir Strainer and
  Cover Gasket
  Remove/Install.......................... 7-68
Hydraulic Solenoid — Inoperative
  Remove/Install.......................... 7-50
Hydraulic Solenoid Valve
  Clean, Inspect, and Repair 7-51
  Remove/Install.......................... 7-47
Hydraulic System.......................7-1, E-5
  Bleed 7-12
  Drain/Service........................... 1-58
  Flush Contaminated 7-80
  Flyable Storage E-4
  Intermediate Storage E-16
  Operational Check 7-2
  Short Term Storage E-7
Hydraulic System Switch
  Remove/Install..........................9-350
Hydraulic System Tubing
  Clean, Inspect, and Repair 7-25
Hydraulic System Will Not Turn Off K-21

I

IFF Bit J-14
IFM Amplifier Bit J-11
Identification of Foreign Material in
  Drive Train System 6-16
Ignition System 4-98.4
Illustrated List of Manufactured Items
  (AVUM, AVIM) H-1

SUBJECT PAGE

I (Cont)

Impeller, Bearing Hanger, Bearing, Fan Shaft and Blower Housing
  Clean, Inspect, and Repair 6-257
  Remove/Install 6-251
Incorrect Capacitance Reading on Test Set K-747
Indicator (AVIM), TGT/TRQ
  Clean, Inspect, and Repair 8-22
  Disassemble/Assemble 8-19
Indicator, Standby Airspeed
  Clean, Inspect, and Repair 8-51
  Install 8-54
  Operational Check 8-49
  Remove 8-53
Indicator, Standby Attitude
  Clean, Inspect, and Repair 8-46
  Operational Check 8-44
  Remove/Install 8-48
Indicator, TGT/TRQ
  Remove/Install 8-18
Inlet Hose, Oil Filter
  Remove/Install 6-345
Input Cyclic Control Bellcrank Assembly (AVIM), Repair 11-266
Input Cyclic Control Bellcrank Assembly
  Clean, Inspect, and Repair 11-264
  Remove/Install 11-262
Input Pinion Magnetic Seal (AVIM) 6-61
Inspect and Clean
  Corner Mount 2-298
  Engine Mount Legs 4-147
  Engine, Rotor, and Transmission Instruments 8-7
  Fuel Differential Pressure Switch 4-134
  Pylon 2-281
  Tailboom Attach Bolts 2-209
Inspect and Repair Armament Hard Point ... 2-178
Inspect, Clean, and Remove/Install Outside Air Thermometer 8-101
Inspect, Clean, and Repair
  AC External Power Control Unit 9-261
  AC External Power Door Switch 9-234
  AC External Power Receptacle 9-238
  AC External Power Reset Switch 9-243
  AC Generator 9-246
  Access Door 2-4
  Access Door Chafing Strip 2-22
  Access Door Hinge Halves, Quick-Disconnect Pin, and Lanyard for 2-19

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)

  Access Door Latch Assembly 2-13
  Actuator Support Assembly (AVIM) 11-168
  Adjustable Tube Assembly 11-258
  Aft Crosstube 3-35
  Aft Crosstube Components 3-41
  Aft Crosstube Support Assembly 3-8
  Aft Crosstube Support Beam Components .. 3-45
  Aft Fairing Assembly 2-68
  Aft Shaft Assembly 6-226
  Aft Transverse Beam 2-314
  Air Data Transducer 8-95
  Air Induction Cowl 4-50
  Air Induction Cowl Access Door 4-56
  Alternator Control Unit 9-253
  Armor Seat Panels 2-51
  Autotransformer, 26V 9-257
  Avionic Cooling System Components 9-476
  Avionics Support 2-173
  Back Cushion 2-46
  Battery 9-185
  Battery Preheat Indicator Lights 9-192
  Beam Assemblies 2-305
  Bearing Hanger, Bearing, Impeller, Fan Shaft and Blower Housing 6-257
  Boost Pump 10-41
  Boosted Bellcrank Assembly 11-272
  Bushing 7-99
  Cabin Roof Drain 2-176
  Cabin Roof Skylight 2-123
  Center Post Duct and Door 2-114
  Chafing Strip for Access Door 2-22
  Charger-Monitor 9-195
  Circuit Breakers (Typical) 9-303
  Clevis Adapter 7-102
  Clock 8-98
  Collective Boosted Bellcrank Assembly (AVIM) 11-160
  Collective Control Input Valve Bellcrank Assembly 11-178
  Collective Control Link Assembly 11-142
  Collective Controls 11-36
  Collective Friction Clamp 11-87
  Collective Jackshaft 11-75
  Collective Jackshaft Spacer 11-81
  Collective Pitch Link Assembly 11-47
  Components of Antibacklash Adapter Assembly 6-124

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)
  Components of Freewheeling Unit (AVIM) ... 6-179
  Components of Shaft and Bearing Hanger Assembly ... 6-238
  Components of the Main Rotor Mast Assembly (AVIM) ... 6-143
  Components of Torquemeter Support and Bearing Assembly (AVIM) ... 6-102
  Copilot Collective Stick Elbow Assembly ... 11-129
  Copilot Collective Stick Inner Tube Assembly ... 11-67
  Copilot Collective Stick Outer Tube Assembly ... 11-69
  Copilot Collective Stick Throttle Arm ... 11-127
  CPO Cyclic Stick Fitting Assembly ... 11-348
  CPO Cyclic Stick Gimble Assembly ... 11-345
  CPO Cyclic Stick Housing Assembly ... 11-380
  CPO Cyclic Stick Link Assembly ... 11-372
  CPO Cyclic Stick Quick-Disconnect Lever Assembly ... 11-368
  CPO Cyclic Stick Plate Assembly ... 11-358
  CPO Cyclic Stick Socket Housing Assembly ... 11-384
  CPO Cyclic Stick Stud ... 11-364
  CPO Cyclic Stick Support Assembly ... 11-354
  CPO Cyclic Stick Tube Assembly ... 11-390
  Crew Door Jettison Mechanism ... 2-31
  Cyclic, Collective and Directional Control Servoactuator (Typical) ... 7-91
  Cyclic Friction Knob and Shaft ... 11-238
  Cyclic Mixer Bellcrank Assembly and Rod End Bearing ... 11-250
  Cyclic Mixer Bellcrank Assembly (AVIM) ... 11-252
  Cyclic Mixer Bellcrank Assembly Clevis ... 11-247
  Cyclic Stick Pivot Bearing Retainer ... 11-284
  Cyclic Torque Tube ... 11-215
  Cyclic Transducer Spacer ... 11-290
  Cyclic Yoke ... 11-228
  Data Bus Coupler or Terminator ... 9-427
  DC External Power Connector ... 9-220
  DC External Power Door Switch ... 9-210
  Defuel Valve ... 10-48
  Directional Control Force Gradient ... 11-456
  Directional Control Pedals ... 11-399
  Directional Control Rotary Actuator ... 11-469
  Droop Compensator Potentiometer Arm ... 11-146
  Dual Tachometer (AVIM) ... 8-29
  Engine Cowl Assembly ... 2-60

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)
  Engine Cowl Assembly Side Panel ... 2-64
  Engine Electronic Supervisory Control ... 9-454
  Engine Mount Trunnion ... 4-144
  Engine to Transmission Driveshaft ... 6-26
  Eyebolt ... 3-21
  Fan Shaft Bearing Hanger Brackets (Forward and Aft) ... 6-271
  Fin Assembly ... 2-240
  Flight Control Bellcranks, Idlers, and Walking Beams ... 11-496
  Flight Control Supports ... 11-510
  Flight Control Tubes ... 11-487
  Force Gradient Tube Assembly ... 11-206
  Fore-and-Aft Force Gradient ... 11-189
  Fore-and-Aft Magnetic Brake ... 11-198
  Forward Crosstube ... 3-24
  Forward Crosstube Components ... 3-30
  Forward Crosstube Strap ... 3-6
  Forward Fairing Assembly ... 2-53
  Forward Firewall ... 4-184
  Forward Shaft Assembly ... 6-221
  Forward Transverse Beam ... 2-312
  Fuel Cell (AVIM) ... 10-64
  Fuel Cell Support Assemblies ... 10-65
  Fuel Shutoff Lever ... 10-5
  Fuel Shutoff Valve (AVIM) ... 10-15
  Fuel Sump ... 10-36
  Fuel System Hoses ... 10-26
  Heater Control Cable ... 13-17
  Heating and Ventilation System Ducts ... 13-18
  Hinge Halves, Quick-Disconnect Pin, and Lanyard for Access Door ... 2-19
  Honeycomb Panels ... 2-131
  Horizontal Stabilizer ... 2-269
  Hydraulic Hoses ... 7-29
  Hydraulic Pressure Switch ... 7-37
  Hydraulic Pump ... 7-78
  Hydraulic Reservoir ... 7-71
  Hydraulic Solenoid Valve ... 7-51
  Hydraulic System Tubing ... 7-25
  Input Cyclic Control Bellcrank Assembly ... 11-264
  Instrument Panel Glareshield ... 8-35
  Integrally Lit Panel (Typical) ... 9-305
  Jackshaft Support Assembly and Bearing ... 11-118
  Jettison Mechanism, Crew Door ... 2-31
  Latch Assembly for Access Door ... 2-13
  Latch Assembly for Crew Door ... 2-32

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)
- Lateral Force Gradient 11-201
- Lateral Magnetic Brake 11-209
- Lights (Typical) 9-266
- Lower Window 2-127
- Lower Wire Cutter 2-73
- Main Rotor Blade Bolt 5-27
- Main Rotor Controls Antidrive Lever (AVIM) 5-229
- Main Rotor Controls Antidrive Link (AVIM) 5-236
- Main Rotor Controls Collective Lever (AVIM) 5-209
- Main Rotor Controls Collective Link (AVIM) 5-219
- Main Rotor Controls Drive Hub Set (AVIM) 5-185
- Main Rotor Controls Drive Lever (AVIM) 5-177
- Main Rotor Controls Drive Link (AVIM) 5-169
- Main Rotor Controls Gimbal Ring (AVIM) 5-195
- Main Rotor Controls Spacer 5-225
- Main Rotor Drive Ring Set 5-91
- Main Rotor Droop Stop Plug 5-34
- Main Rotor Droop Stop Stud 5-42
- Main Rotor Expandable Bolt 5-25
- Main Rotor Grip Assembly 5-84
- Main Rotor Grip Lead Lag Bearings 5-76
- Main Rotor Hub Damper (AVIM) 5-51
- Main Rotor Hub Lower Cone 5-14
- Main Rotor Hub Lower Plate 5-94
- Main Rotor Hub Shear Bearings 5-63
- Main Rotor Hub Upper Plate 5-58
- Main Rotor Hub Yoke 5-101
- Main Rotor Pitch Horn Assembly (AVIM) 5-69
- Main Rotor Pitch Link 5-162
- Main Rotor Swashplate and Support 5-242
- Main Rotor Swashplate and Support Components (AVIM) 5-257
- Main Rotor Upper Cone Plate Assembly 5-11
- Main Rotor Yoke Adapter Assembly 5-79
- Maintenance Step (Left Side) 2-130
- Miscellaneous Electrical Equipment 9-300
- Mixing Valve (AVIM) 13-5
- Mount Bolt 2-308
- Multiparameter Display (MPD) (AVIM) 8-12

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)
- Night Vision Power Supply 9-293
- Oil Cooler Bypass Valve 4-85
- Oil Cooler Duct 6-369
- Oil Drain Valve 6-355
- Oil Filter Bypass Valve Assembly 6-339
- Oil Filter Manifold 6-330
- Oil Pressure Regulator Valve 6-335
- Oil Pressure Switch 6-348
- Oil Pressure Transducer 6-351
- Oil Tank Assembly 4-71
- Oil Tank Support and Oil Cooler Support Duct 4-88
- Overload Sensing Control 9-225
- Particle Separator 4-60
- Pedal Adjustment and Support Assemblies 11-398
- Pilot Collective Stick Control Panel Box 11-97
- Pilot Collective Stick Detent Button 11-101
- Pilot Collective Stick Elbow Assembly 11-107
- Pilot Collective Stick Inner Tube Assembly 11-109
- Pilot Collective Stick Outer Tube Assembly 11-105
- Pilot Collective Stick Ring Gears 11-111
- Pilot Collective Stick Throttle Arm 11-113
- Pilot Collective Stick Throttle Friction Plug 11-99
- Pilot Collective Stick Throttle Grip Assembly 11-103
- Pilot Cyclic Pivot Assembly 11-286
- Pilot Cyclic Position Adjustment Indicator Pin 11-312
- Pilot Cyclic Position Adjustment Rod End 11-304
- Pilot Cyclic Stick Fitting Assembly 11-328
- Pilot Cyclic Stick Indicator Pin Retainer 11-288
- Pilot Cyclic Stick Pivot Bearing 11-299
- Pilot Cyclic Stick Stop 11-292
- Pilot Cyclic Tube Assembly 11-325
- Pitch Rate Sensor 9-419
- Pitot-Static Tubing and Fittings 8-62
- Pitot Tube 8-86
- Pivot Support Bearing 11-283
- Plenum Assembly 13-32
- Pylon Fitting Assembly 6-77
- Quick-Disconnect Coupling Halves 4-93

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)
  Remote Sensor 13-13
  Roll Rate Sensor 9-423
  Seat Restraint 2-42
  Signal Conditioning Unit and Chain (TAMS) 9-463
  Signal Conditioning Unit (Mast Torque) 9-459
  Skid Shoes and Skid Tube Rivnut 3-18
  Skid Tube Assembly 3-12
  Spacer 5-373
  Spring Assembly 2-310
  Standby Airspeed Indicator 8-51
  Standby Altimeter 8-41
  Standby Attitude Indicator 8-46
  Standby Compass 8-92
  Starter-Generator 9-214
  Stop-Down Assembly 2-302
  Stop Nut 2-300
  Sump Valve 10-52
  Tailboom 2-187
  Tailboom/Aft Fuselage Attach Fittings 2-203
  Tailboom Attach Bolts 2-211
  Tailboom Bearing Hanger Supports 2-224
  Tail Light Support 2-275
  Tail Rotor Assembly 5-357
  Tail Rotor Blades 5-391
  Tail Rotor Control Tube Driver Plate 5-346
  Tail Rotor Counterweight Bracket 5-377
  Tail Rotor Counterweight Support 5-368
  Tail Rotor Crosshead 5-351
  Tail Rotor Driveshaft Cover 2-234
  Tail Rotor Gearbox 6-296
  Tail Rotor Gearbox Pitch Change Housing 5-465
  Tail Rotor Gearbox Support Assembly 2-214
  Tail Rotor Hub Components (AVIM) 5-380
  Tail Rotor Pitch Change Control Tube 5-438
  Tail Rotor Pitch Change Idler 5-430
  Tail Rotor Pitch Change Lever (AVIM) 5-421
  Tail Rotor Pitch Change Rod Assembly 5-414
  Tail Rotor Pitch Change Trunnion 5-463
  Tail Rotor Pitch Change Trunnion Cap 5-461
  Tail Rotor Pitch Horn 5-375
  Tail Rotor Pitch Link 5-341
  Tail Rotor Retaining Nut 5-371
  TAMS Linear Variable Differential Transformer (LVDT) 9-468
  Temperature Control Valve (Engine Oil System) 6-359

SUBJECT PAGE

I (Cont)

Inspect, Clean, and Repair (Cont)
  TGT/TRQ Indicator (AVIM) 8-22
  Tow Fittings 3-49
  Transducer 11-59
  Transformer Rectifier Unit (TRU) 9-181
  Transmission 6-29
  Transmission Oil Jets (Number One and Two) 6-344
  Transmission Oil Pump 6-320
  Trunnion Bearing 7-95
  Trunnion Bearing Assembly 11-54
  Upper Wire Cutter 2-86
  Vent Control Cable 13-38
  Voltage Regulator 9-229
  Windshield Assembly 2-119
Inspect, Clean, and Repair, and Build Up Oil Cooler 6-362
Inspect, Clean, Repair and Refinish Tail Rotor Blades 5-391
Inspect Disc Pack Assemblies 6-231
Inspect Electrical Connections in Overhead Console and Center Post Circuit Breaker Panel (Typical) 9-324
Inspect Engine to Transmission Driveshaft 6-20
Inspect Landing Gear 3-3
Inspect Landing Gear for Crosstube Deflection 3-4
Inspect Main Rotor Blade 5-107
Inspect, Remove, and Install Fire Extinguisher 17-2
Inspect, Remove, and Install First Aid Kit 17-3
Inspect, Remove, and Install Maintenance Step 2-129
Inspect, Remove, and Install Tailboom Fairleads 2-218
Inspect, Remove, Clean, Repair, and Install Hydraulic Filter Element Assembly 7-15
Inspect, Remove/Install, and Clean Lower Transmission Boot Assembly 6-38
Inspect, Remove, Repair, and Install Receiver Assembly 10-55
Inspect Tail Rotor 5-338
Inspect Tail Rotor Pitch Change Mechanism 5-409
Inspection, Checksheet, Aircraft 1-136
Inspection of Stored Helicopters E-2
Install
  AC Generator 9-250
  Air Data Transducer 8-68

SUBJECT PAGE

I (Cont)

- Install (Cont)
  - Air Induction Cowl 4-52
  - Anticollision Light Flasher 9-274
  - Anticollision Light (Typical) 9-270
  - Avionic Cooling System Blower 9-484
  - Boost Pump 10-42
  - Circuit Breaker In DC Equipment Electrical Assembly (Typical) 9-354
  - Circuit Breaker In Nose Compartment (Typical) 9-365
  - Cyclic Friction Knob and Shaft 11-240
  - Cyclic Torque Tube 11-218
  - Digital Fuel Control Panel 9-329
  - Directional Control Pedals from Support Assembly 11-404
  - Electrical Wiring and Cabling in Avionics Compartment 10-84
  - Electronic Supervisory Control 9-457
  - Engine Assembly 4-15
  - Fan Shaft Assembly 6-265
  - Flood Light (Typical) 9-277
  - Fore-and-Aft Cyclic Transducer 11-235
  - Freewheeling Unit 6-213
  - Fuel Shutoff Lever 10-7
  - Fuel Sump 10-37
  - Helicopter Covers 1-89
  - Integrally Lit Panel on CPO Auxiliary Switch Panel 9-441
  - Integrally Lit Panel on CPO Channel Select Switch 9-439
  - Integrally Lit Panel on Digital Fuel Control Panel 9-331
  - Integrally Lit Panel on Overhead Console or Center Post Circuit Breaker Panel (Typical) 9-326
  - Integrally Lit Panel on Pilot (MFD) Auxiliary Control Panel 9-443
  - Integrally Lit Panel on SCAS Control Panel 9-341
  - Landing Gear 3-10
  - Lateral Cyclic Transducer 11-231
  - Lateral Magnetic Brake 11-210
  - Left Cyclic Yoke 11-223
  - Main Rotor Controls Antidrive Lever 5-233
  - Main Rotor Controls Antidrive Link 5-240
  - Main Rotor Controls Collective Lever 5-214
  - Main Rotor Controls Collective Link 5-223
  - Main Rotor Controls Drive Hub Set 5-189
  - Main Rotor Controls Drive Link 5-173

SUBJECT PAGE

I (Cont)

- Install (Cont)
  - Main Rotor Controls Drive Lever 5-180
  - Main Rotor Controls Gimbal Ring 5-200
  - Main Rotor Hub and Blade Assembly 5-7
  - Main Rotor Mast Assembly 6-165
  - Main Rotor Pitch Link 5-165
  - Main Rotor Swashplate and Support 5-298
  - Mixing Valve 13-9
  - Night Vision Power Supply (Typical) 9-295
  - Oil Cooler 6-366
  - Particle Separator Fan and Duct 4-58
  - Pitot-Static Tubing and Fittings 8-75
  - Plenum Assembly 13-33
  - Position Light Dimming Resistor 9-283
  - Remote Control Circuit Breaker 9-359
  - Right Cyclic Yoke 11-226
  - SCAS Control Panel 9-339
  - Searchlight 9-288
  - Shunt 9-394
  - Side Position Light (Typical) 9-279
  - Signal Conditioning Unit (Mast Torque) 9-462
  - Signal Conditioning Unit (TAMS) 9-466
  - Standby Airspeed Indicator 8-54
  - Standpipe Electrical Assembly 6-86
  - Tailboom 2-220
  - Tail Position Light 9-281
  - Tail Rotor Assembly 5-366
  - Tail Rotor Control Tube Driver Plate 5-348
  - Tail Rotor Crosshead 5-353
  - Tail Rotor Pitch Change Control Tube 5-440
  - Tail Rotor Pitch Change Idler 5-434
  - Tail Rotor Pitch Change Levers 5-426
  - Tail Rotor Pitch Change Rod Assembly 5-417
  - Tail Rotor Pitch Link 5-343
  - Torquemeter Support and Bearing Assembly 6-119
  - Torquemeter System Anti-Backlash Adapter Assembly 6-133
  - Transmission 6-53
  - Utility Light 9-291
- Installed Avionics Equipment 18-1
- Install/Remove
  - AC External Power Control Unit 9-263
  - AC External Power Door Switch 9-236
  - AC External Power Receptacle 9-240
  - AC External Power Reset Switch 9-244
  - Access Door Jettison Mechanism 2-25
  - Actuator Idler Bearing (AVIM) 11-449
  - Actuator Support Assembly 11-164

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
- Actuator Support Bushing (AVIM) 11-452
- Adapter 7-100
- Adapter Bearing, Hanger and Segmented Shaft (Typical) 6-236
- Adjustable Tube Assembly 11-161
- Adjustable Tube Assembly Rod End Bearing (Typical) 11-260
- Adjustable Tube Assembly (Typical) 11-254
- Aft Crosstube 3-34
- Aft Crosstube Components 3-37
- Aft Crosstube Support Beam and Components 3-43
- Aft Crosstube Support Beam Bushings (AVIM) 3-47
- Aft Fairing Assembly 2-67
- Aft NG Cable Uniball Bearing 4-116
- Aft Shaft Assembly 6-223
- Air Data Power Supply 8-69
- Air Induction Cowl Access Door 4-99
- Air Valve and Vent in Access Door 2-12
- Alternator Control Unit 9-255
- Armor Seat Panels 2-48
- Autotransformer 26V 9-259
- AUX RCPT Circuit Breaker, 28 VDC 9-452
- Avionic Cooling System Flexible Air Duct Coupling 9-490
- Avionic Cooling System Motor Intake Duct Assembly 9-487
- Avionic Cooling System Thermo Switch (Typical) 9-488
- Back Cushion 2-45
- Batteries 9-187
- Battery Preheat Indicator Light (Typical) 9-193
- Bearing Hanger, Bearing, Impeller, Fan Shaft and Blower Housing 6-251
- Bearing in Force Gradient Cylinder (AVIM) 11-194
- Bellmouth 4-188
- Bleed Air Heater Tube and Gasket 4-30
- Boosted Bellcrank Assembly 11-270
- Boosted Tube Assembly 11-278
- Breather Tube Assembly 6-73
- Bulb P/N 56B3C (for Air Data System) 8-64
- Bushings 7-97
- Cabin Roof Skylight 2-121
- Cable Assembly 10-18
- Cap, Spring and Rod End Assemblies 2-316
- Cartridge 10-44

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
- Center Console Top Cover 11-485
- Center Post Duct and Doors 2-112
- Charger-Monitor 9-198
- Circuit Breaker in Center Post Circuit Breaker Panel (Typical) 9-312
- Circuit Breaker in Overhead Console (Typical) 9-310
- Clock 8-100
- Clogged Oil Drain Tubes 4-95
- Collective Adjustable Tube Assembly 11-136
- Collective Adjustable Tube Assembly Clevis 11-138
- Collective and Cyclic Actuator Mount Bushings 11-149
- Collective Boosted Bellcrank Assembly 11-151
- Collective Control Input Valve Bellcrank Assembly 11-176
- Collective Control Link Assembly 11-140
- Collective Control Panel Assembly Integrally Lit Panel 11-124
- Collective Friction Knob and Shaft 11-171
- Collective Friction Knob and Shaft Pin 11-173
- Collective Hydraulic Actuator 7-105
- Collective Jackshaft Adjustable Nut 11-77
- Collective Jackshaft Assembly 11-72
- Collective Jackshaft Friction Adjustment Bearing 11-78
- Collective Jackshaft Shim and Spacer 11-79
- Collective Jackshaft Support Clamp 11-84
- Collective Jackshaft Tube Assembly 11-83
- Collective Mixing Lever Assembly 11-133
- Collective Mixing Lever Assembly Bushings 11-135
- Collective Pitch Link Assembly 11-45
- Collective Plate Assembly 11-174
- Collective Stick Assembly Miscellaneous Parts, Pilot 11-93
- Collective Stick Assembly, Pilot 11-89
- Collective Stick Tiedown Strap 11-43
- Collective Transducer 11-57
- Combining Bellcrank Bearing Sleeve (AVIM) 11-412
- Console or Instrument Dimming Control 9-371
- Control Support Assembly 11-164, 11-277
- Control Support Assembly Bushings (AVIM) 11-160
- Controls Adjustable Tube Assembly 11-269

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
- Cooler Duct 6-368
- Copilot Collective Elbow Assembly 11-125
- Copilot Collective Elbow Assembly Insert 11-131
- Copilot Collective Elbow Assembly Bushing 11-132
- Copilot Collective Stick Assembly 11-71
- Copilot Collective Stick Assembly Plug 11-62
- Copilot Collective Stick Tube Assemblies 11-63
- Copilot Cyclic Stick 11-334
- Corner Mount, Stop Nut and/or Stop Down Assembly 2-283
- Coupling Disc Pack (Typical) 6-229
- Cover and Chain (TAMS) Signal Conditioning Unit 9-467
- CPO Channel Select Switch 9-437
- CPO Cyclic Stick Fitting Assembly Bearings (AVIM) 11-350
- CPO Cyclic Stick Gimble Assembly Bushing (AVIM) 11-347
- CPO Cyclic Stick Gimble, Fitting, Plate, and Support Assemblies 11-338
- CPO Cyclic Stick Housing Assembly Bearings (AVIM) 11-382
- CPO Cyclic Stick Lockout Catch 11-242
- CPO Cyclic Stick Plate Assembly Bearing (AVIM) 11-360
- CPO Cyclic Stick Quick-Disconnect Lever and Link Assembly 11-366
- CPO Cyclic Stick Quick-Disconnect Lever Bushings (AVIM) 11-370
- CPO Cyclic Stick Socket Housing and Housing Assembly 11-376
- CPO Cyclic Stick Socket Housing Bushings (AVIM) 11-386
- CPO Cyclic Stick Stud Assembly 11-362
- CPO Cyclic Stick Support Assembly Bearing (AVIM) 11-356
- CPO Cyclic Stick Tube Assembly 11-388
- Crew Door 2-27
- Crew Door Jettison Mechanism 2-29
- Crew Seat and Floor Panel 2-47
- Cyclic Hydraulic Actuator 7-108
- Cyclic Mixer Bellcrank Assembly 11-243
- Data Bus Coupler or Terminator (Typical) 9-429

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
- DC External Power Connector 9-222
- DC External Power Door Switch 9-211
- Defogging Blower 13-34
- Defuel Valve 10-46
- Diode (Typical) 9-367
- Directional Control Actuator Input Idler Assembly 11-447
- Directional Control Adjustable Tube Bearing (Typical) 11-446
- Directional Control Aft Walking Beam 11-474
- Directional Control Aft Walking Beam Bearing (AVIM) 11-477
- Directional Control Boosted Tube 11-471
- Directional Control Combining Bellcrank 11-409
- Directional Control Eyebolt and Spring 11-413
- Directional Control Force Gradient 11-454
- Directional Control Force Gradient Bearing and Sleeve 11-458
- Directional Control Force Gradient Spring, Guides, or Shaft 11-463
- Directional Control Force Gradient Switch (AVIM) 11-460
- Directional Control Forward Walking Beam 11-442
- Directional Control Lower Aft Horizontal Tube 11-427
- Directional Control Lower Forward Horizontal Tube 11-415
- Directional Control Lower Tunnel Bellcrank 11-430
- Directional Control Lower Tunnel Bellcrank Bushing 11-432
- Directional Control Nonboosted Tube 11-444
- Directional Control Pedal Adjustment and Support Assembly 11-395
- Directional Control Pedal Bearing (AVIM) 11-402
- Directional Control Pedal Bellcrank 11-405
- Directional Control Pedal Bellcrank Bushing and Bearing (AVIM) 11-406
- Directional Control Pedal Tube 11-407
- Directional Control Rotary Actuator 11-466
- Directional Control Servoactuator 7-93
- Directional Control Servoactuator Support 11-451
- Directional Control Tailboom Tube 11-479

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
  Directional Control Transducer 11-424
  Directional Control Transducer Bellcrank and Support 11-418
  Directional Control Upper Horizontal Tube 11-437
  Directional Control Upper Tunnel Bellcrank 11-435
  Directional Control Vertical Tube 11-433
  Dual Tachometer 8-26
  Electrical Connector Beneath CPO Seat 9-450
  Engine Control Cable Bellows Assembly 4-124
  Engine Cowl Assembly 2-58
  Engine Cowl Assembly Side Panel 2-63
  Engine Mount Legs 4-136
  Engine Oil Service Door on Aft Fairing Assembly 2-70
  Engine to Transmission Driveshaft 6-21
  Engine Vent and Fuel Supply Hoses 10-21
  Eyebolt 3-20
  Fan Shaft Bearing Hanger Brackets (Forward and Aft) 6-268
  Fin Assembly 2-267
  Flex Hose (Typical) 7-26
  Footswitch (Typical) 9-446
  Fore-and-Aft Force Gradient 11-187
  Fore-and-Aft Magnetic Brake 11-196
  Forward Crosstube 3-23
  Forward Crosstube Components 3-28
  Forward Fairing Assembly 2-52
  Forward Fairing Assembly Seal 2-56
  Forward Firewall Assembly 4-178
  Forward Firewall Assembly Seals 4-189
  Forward Shaft Assembly 6-219
  Freewheeling Unit Tail Rotor Drive Output Adapter Wear Sleeve (AVIM) 6-210
  Freewheeling Unit Tail Rotor Drive Output Oil Seal (AVIM) 6-206
  Freewheeling Unit Tail Rotor Drive Output Shaft Support Bearing (AVIM) 6-208
  Fuel Cell 10-58
  Fuel Cell Vent Hose 10-28
  Fuel Control Clevis 4-131
  Fuel Control Lever 4-129
  Fuel Differential Pressure Switch 4-133
  Fuel Pressure Switch 10-30
  Fuel Probe 10-32

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
  Fuel Quantity Control Unit 9-436
  Fuel Shutoff Valve 10-12
  Ground Module (Typical) 9-406
  Heater Control Cable 13-15
  Heater Overheat Switch 9-379
  Heating and Ventilation System Ducts 13-21
  Horizontal Stabilizer 2-273
  Hose, Tubes, or Packing (Typical) 4-32
  Hub Shear Bearing (AVIM) 5-61
  Hydraulic Pump 7-74
  Hydraulic Reservoir Assembly 7-58
  Hydraulic Reservoir Cover, Latch Assembly 7-63
  Hydraulic Reservoir Cover, Pin and Cap Gasket 7-61
  Hydraulic Reservoir Return Port Union 7-65
  Hydraulic Reservoir Screen 7-70
  Hydraulic Reservoir Sight Plug 7-67
  Hydraulic Reservoir Strainer Cover Gasket 7-68
  Hydraulic Solenoid — Inoperative 7-50
  Hydraulic Solenoid Valve 7-47
  Hydraulic System Switch 9-350
  Input Cyclic Control Bellcrank Assembly 11-262
  Input Pinion Magnetic Seal (AVIM) 6-61
  Instrument Panel Glareshield 8-33
  Integrally Lit Panel Connector on Digital Fuel Control 9-333
  Integrally Lit Panel From MMS Control Panel 9-444
  Integrally Lit Panel On MMS Control Panel 9-445
  Integrally Lit Panel on Pilot Collective Stick 9-376
  Jackshaft Support Assembly 11-115
  Jackshaft Support Assembly Bearing 11-117
  Jettison Mechanism, Crew Door 2-29
  Junction Block (Typical) 9-404
  Keylock Switch 9-414
  Lanyard on Main Rotor Expandable Bolt 5-24
  Lateral Force Gradient 11-199
  Left Access Panel 2-175
  Lighting Control Knob on Overhead Console (Typical) 9-316
  Link Assembly Bushings (AVIM) 11-374
  Lower Chip Detector 6-72

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
  Lower Window 2-124
  Lower Wire Cutter 2-71
  Main Rotor Blade 5-18
  Main Rotor Blade Trim Tab (AVIM) 5-127
  Main Rotor Blades Off Helicopter 5-16
  Main Rotor Controls Boot 5-203
  Main Rotor Drive Ring Set (AVIM) 5-89
  Main Rotor Droop Stop Plugs 5-29
  Main Rotor Droop Stop Studs 5-37
  Main Rotor Expandable Bolt 5-21
  Main Rotor Grip and Adapter Assembly 5-104
  Main Rotor Grip Bushings/Pins/Inserts (AVIM) 5-86
  Main Rotor Grip Lead Lag Bearings (AVIM) 5-74
  Main Rotor Hub Damper (AVIM) 5-47
  Main Rotor Hub Damper Shims (AVIM) 5-55
  Main Rotor Hub Shear Bushings (AVIM) 5-61
  Main Rotor Inboard Erosion Strip (AVIM) 5-136
  Main Rotor Pitch Horn Assembly 5-67
  Main Rotor Pitch Horn Bushings (AVIM) 5-72
  Main Rotor Pitch Link Horn Attaching Hardware 5-45
  Main Rotor Yoke Adapter Mount Bushings (AVIM) 5-82
  Main Rotor Yoke Buffers (AVIM) 5-96
  Main Rotor Yoke Bumpers (AVIM) 5-99
  Mixing Lever Supports 11-49
  Multiparameter Display (MPD) 8-10
  Multiparameter Display BRT Control Knob 8-8
  Multiparameter Display Fuse(s) (Typical) 8-9
  NG Engine Control Cable 4-104
  NG Engine Control Cable Aft Support Bracket 4-121
  Oil Cooler Bypass Valve 4-82
  Oil Cooler Duct 6-368
  Oil Cooler Fairing Seals 4-94
  Oil Drain Valve 6-353
  Oil Filter Bypass Valve Assembly 6-337
  Oil Filter Inlet Hose 6-345
  Oil Filter Manifold 6-326
  Oil Level Switch 4-73
  Oil Pressure Regulator Valve 6-332
  Oil Pressure Switch 6-346
  Oil Pressure Transducer 6-349
  Oil Pressure Transmitter 4-29

SUBJECT PAGE

I (Cont)

Install/Remove (Cont)
  Oil Tank Assembly 4-69
  Oil Tank Cap and Adapter Assembly 4-81
  Oil Tank Drain Valve 4-80
  Oil Tank Sight Glass 4-76
  Oil Tank Temperature Transducer 4-78
  Overload Sensing Control 9-227
  Particle Separator 4-59
  Pilot Collective Elbow Assembly 11-121
  Pilot Collective Elbow Assembly Bearings 11-122
  Pilot Collective Stick Assembly 11-89
  Pilot Collective Stick Assembly Miscellaneous Parts 11-93
  Pilot Collective Stick Cover 11-44
  Pilot Cyclic Fitting Assembly Bearings (AVIM) 11-330
  Pilot Cyclic Pivot Assembly 11-280
  Pilot Cyclic Pivot Support Assembly 11-332
  Pilot Cyclic Pivot Support Assembly Inserts 11-333
  Pilot Cyclic Position Adjustment Indicator Pin 11-310
  Pilot Cyclic Position Adjustment Knob Assembly 11-306
  Pilot Cyclic Position Adjustment Rod End 11-300
  Pilot Cyclic Stick Assembly 11-314
  Pilot Cyclic Stick Fitting Assembly 11-319
  Pilot Cyclic Stick Pivot Bearing 11-298
  Pitch Rate Sensor 9-421
  Pitot Tube 8-84
  Pivot Assembly Bearing (AVIM) 11-294
  Pressure Manifold 7-41
  Pressure Switch 7-35
  Pushbutton Switch on Digital Fuel Control Panel 9-335
  Pylon Fitting Assembly 6-77
  Quick-Disconnect Self-Sealing Coupling Half (Typical) 7-32
  Relay (Typical) 9-381
  Relief Valve 7-44
  Remote Sensor 13-12
  Resitor or Capacitor on Terminal Junction (Typical) 9-433
  Return Manifold 7-38
  Rigid Tube Assembly (Typical) 7-23
  Roll Rate Sensor 9-425
  Rotor Tiedowns 1-91

SUBJECT PAGE

I (Cont)

- Install/Remove (Cont)
  - SCAS Force Trim Switch 9-347
  - SCAS Pitch and Roll Engage Switch 9-342
  - SCAS Power Switch 9-348
  - SCAS Test Switch 9-346
  - SCAS Yaw Engage Switch 9-344
  - Seal on Forward Fairing Assembly 2-56
  - Seat Restraint 2-37
  - Servo Trunnion Bearing 7-93
  - Shaft and Bearing Hanger Assembly 6-233
  - Sight Gage 6-75
  - Skid Shoes and Skid Tube Rivnut 3-16
  - Skid Tube Assembly 3-14
  - Snap Vent In Access Door Window 2-11
  - Socket (Typical) 9-387
  - Solenoid 13-11
  - Standby Altimeter 8-43
  - Standby Attitude Indicator 8-48
  - Standby Compass 8-94
  - Starter-Generator 9-216
  - Sump Valve 10-50
  - Switch in Cyclic Grip (Typical) 9-408
  - Switch in Forward Overhead Console (Typical) 9-317
  - Switch in Pilot Collective Stick (Typical) 9-377
  - Tailboom Bearing Hanger Support 2-229
  - Tail Light Support 2-277
  - Tail Rotor Bellcrank 11-481
  - Tail Rotor Bellcrank Bearing (AVIM) 11-483
  - Tail Rotor Driveshaft Cover 2-231
  - Tail Rotor Gearbox 6-291
  - Tail Rotor Gearbox Boot 5-441
  - Tail Rotor Gearbox Housing Packing 5-455
  - Tail Rotor Gearbox Input Seal (AVIM) 6-301
  - Tail Rotor Gearbox Oil Temperature Thermoswitch 6-300
  - Tail Rotor Gearbox Output Shaft Seal (AVIM) 6-309
  - Tail Rotor Gearbox Trunnion Seal and Bearing 5-449
  - Tail Rotor Pitch Change Idler Bushings and Bearing (AVIM) 5-432
  - Tail Rotor Pitch Change Lever Bushings and Bearing (AVIM) 5-424
  - Tail Skid Assembly 2-256
  - TAMS Linear Variable Differential Transformer (LVDT) 9-470

SUBJECT PAGE

I (Cont)

- Install/Remove (Cont)
  - Tee, Retainer, Packing and Nut 7-30
  - Temperature Control Valve 6-357
  - Temperature Transducer 6-70
  - Terminal Board (Typical) 9-398
  - Terminal Junction Mount (Typical) 9-400
  - TGT/TRQ Indicator 8-18
  - Thermostat 6-68
  - Throttle Arm Rod End 4-126
  - Toggle Switch On Digital Fuel Control Panel 9-336
  - Torque Shaft Assembly 6-219
  - Torque Transducer 6-116
  - Torquemeter Support Bearing (AVIM) 6-96
  - Torquemeter Support Bearing Seal 6-94
  - Torquemeter Temperature Bulb 6-114
  - Tow Fittings 3-48
  - Transducer Bellcrank Bearing (AVIM) 11-421
  - Transducer Bellcrank Support Bearing (AVIM) 11-423
  - Transformer In Forward Overhead Console (Typical) 9-319
  - Transformer-Rectifier Unit (TRU) 9-183
  - Transmission Oil Filters 6-321
  - Transmission Oil Jets (Number One and Two) 6-341
  - Transmission Oil Pump 6-317
  - Trunnion Bearing Assembly 11-51
  - Upper Chip Detector 6-66
  - Upper Wire Cutter 2-75
  - Vent Control Cable 13-36
  - Vertical Fin Bumper and Pin 2-258
  - Voltage Regulator 9-231
  - Weight-On-Gear Switch 9-448
  - Window In Access Door 2-9
  - Windshield Assembly 2-115
- Install and Repair Hydraulic Filter Assembly, Remove, Clean, Inspect 7-15
- Install, Clean, and Remove/Install Lower Transmission Boot Assembly 6-38
- Install, Remove, and Inspect Maintenance Step 2-129
- Install/Remove, Clean, and Inspect Outside Air Thermometer 8-101
- Install, Remove, Repair, and Inspect Receiver Assembly 10-55
- Installed Avionics Equipment 18-1

SUBJECT PAGE

I (Cont)

- Instructions for Use of the Forms and Charts G-2
  - Aircraft Weighings G-14
  - Airplane Weighing Record, DD Form 365B G-6
  - Basic Weight and Balance Record, DD Form 365C G-6
  - Basic Weight Checklist, DD Form 365A G-2
  - Forms G-2
  - Loading Data G-11
  - Preliminary Weighing Instructions G-14
  - Record of Weight and Balance Personnel, DD Form 365 G-2
  - Weighing Instructions G-14
  - Weight and Balance Clearance Form F, DD Form 365F G-11
  - Weight Balance and Load Data G-2
- Instrument Lights Do Not Come on When INST LT Control is Turned Clockwise From OFF to BRT K-484
- Instrument Lights — Operational Check K-155
- Instrument Lights Secondary Dimming Potentiometer Causes Dimming for CW Rotation K-505
- Instrument Lights Secondary Dimming Potentiometer Does Not Control CPO Communication System Control K-551
- Instrument Lights Secondary Dimming Potentiometer Does Not Control Dual Tachometer K-550
- Instrument Lights Secondary Dimming Potentiometer Does Not Control Left Multifunction Display (MFD) K-562
- Instrument Lights Secondary Dimming Potentiometer Does Not Control Remote Frequency Display (RFD) K-564
- Instrument Lights Secondary Dimming Potentiometer Does Not Control Right Malfunction Display (MFD) K-563
- Instrument Lights Secondary Dimming Potentiometer Does Not Control the CPO Channel Select Panel K-565
- Instrument Lights Secondary Dimming Potentiometer Does Not Control the CPO Malfunction Display (MFD) Auxiliary Switch Panel K-566
- Instrument Lights Secondary Dimming Potentiometer Does Not Control the Mast Mounted Sight (MMS) Control K-568

SUBJECT PAGE

I (Cont)

- Instrument Lights Secondary Dimming Potentiometer Does Not Control TGT/TRQ Indicator K-504
- Instrument Lights Seconary Dimming Potentiometer Does Not Control the Pilot Multifunction Display (MFD) Auxilary Switch Panel K-567
- Instrument Panel Glareshield
  - Clean, Inspect, and Repair 8-35
  - Remove/Install 8-33
- Instrument Systems 8-1
- Instruments E-12, E-25
  - Intermediate Storage E-16
  - Short Term Storage E-12
- Intake Duct Assembly, Avionic Cooling System Motor
  - Remove/Install 9-487
- Integrally Lit Panel Connector on Digital Fuel Control Panel
  - Remove/Install 9-333
- Integrally Lit Panel From CPO Auxiliary Switch Panel, Remove 9-440
- Integrally Lit Panel From CPO Channel Select Switch, Remove 9-438
- Integrally Lit Panel From Digital Fuel Control Panel, Remove 9-330
- Integrally Lit Panel From MMS Control Panel, Remove/Install 9-444
- Integrally Lit Panel From Overhead Console or Center Post Circuit Breaker Panel (Typical), Remove 9-322
- Integrally Lit Panel From Pilot (MFD) Auxiliary Control Panel, Remove 9-442
- Integrally Lit Panel From SCAS Control Panel, Remove 9-340
- Integrally Lit Panel on CPO Auxiliary Switch Panel, Install 9-441
- Integrally Lit Panel on CPO Channel Select Switch, Install 9-439
- Integrally Lit Panel on Digital Fuel Control Panel, Install 9-331
- Integrally Lit Panel on MMS Control Panel Remove/Install 9-445
- Integrally Lit Panel on Overhead Console or Center Post Circuit Breaker Panel (Typical), Install 9-326
- Integrally Lit Panel on Pilot Collective Stick Remove/Install 9-376

SUBJECT PAGE

I (Cont)

Integrally Lit Panel on Pilot (MFD)
  Auxiliary Control Panel, Install 9-443
Integrally Lit Panel on SCAS Control
  Panel, Install 9-341
Integrally Lit Panel (Typical)
  Clean, Inspect, and Repair 9-305
Intermediate Storage E-16
  Accident Engines — Preservation E-26
  Airframe E-25
  Avionic Equipment E-25
  Combat Damaged Fuel Cells E-23
  Damaged, Cannibalized or Failed Engine
    Preservation Procedure E-27
  Depreservation After E-27
  Description E-16
  Electrical System E-24
  Emergency Equipment E-25
  Engine E-17
  Fuel System E-19
  Hydraulic System E-24
  Inspection Prior to Storage E-16
  Instruments E-25
  Landing Gear E-25
  Main Rotor Blades E-24
  Main Rotor Hub and Blade Assembly E-24
  Maintenance of Preservation E-26
  Power Train System E-17
  Tail Rotor Group E-25
Introduction — Maintenance
  Allocation Chart 1-1, B-1
Inventory Master Guide, Helicopter C-1
Inventory, Periods of C-2
Inventoriable Items C-1
INV Fail Message Displayed on MFD, 115 Not
  Displayed on MPD K-733

J

Jack Helicopter 1-80
Jackshaft Support Assembly
  Remove/Install 11-115
Jackshaft Support Assembly and Bearing
  Clean, Inspect, and Repair 11-118
  Remove/Install 11-117

SUBJECT PAGE

J (Cont)

Jettison Mechanism, Crew Door
  Clean, Inspect, and Repair 2-31
  Remove/Install 2-29
Jib Hoist Assemble/Disassemble 1-107
Junction Block (Typical)
  Remove/Install 9-404

K

Keyboard Has No Response On OPERATOR
  CHECKS Page During SWITCH CHECK K-152
Keyboard Not Lit After CONSOLE LT
  Control is Turned From OFF to BRT K-509
Keylock Switch, Remove/Install 9-414
Knob on Overhead Console (Typical),
  Lighting Control, Remove/Install 9-316

L

Landing Gear 3-1, E-12
  Inspect 3-3
  Inspect for Crosstube Deflection 3-4
  Install 3-10
  Intermediate Storage E-25
  Remove 3-5
  Short Term Storage E-12
Lanyard for Access Door, Hinge Halves,
  Quick-Disconnect Pin
    Clean, Inspect, and Repair 2-19
Lanyard on Main Rotor Expendable Bolt
  Remove/Install 5-24
Last Flight Recall J-5
Latch Assembly for Access Door
  Clean, Inspect, and Repair 2-13
Latch Assembly for Crew Door
  Clean, Inspect, and Repair 2-32
Latch Assembly, Hydraulic Reservoir Cover
  Remove/Install 7-63
Lateral Cyclic Transducer
  Install 11-231
  Remove 11-230

SUBJECT PAGE

L (Cont)

- Lateral Force Gradient
  - Clean, Inspect, and Repair 11-201
  - Remove/Install 11-199
- Lateral Magnetic Brake
  - Clean, Inspect, and Repair 11-209
  - Install 11-218
  - Remove 11-216
- Lead Lag Bearings (AVIM)
  - Clean, Inspect, and Repair 5-76
  - Remove/Install 5-74
- Left Access Panel
  - Remove/Install 2-175
- Left Cyclic Yoke
  - Install 11-223
  - Remove 11-221
- Left Defog Blower Does Not Operate K-109
- Left Multifunction Display (MFD) Not Lit After INST LT Control Is Turned From OFF to BRT K-501
- Lever, Fuel Shutoff
  - Clean, Inspect, and Repair 10-5
  - Install 10-7
  - Remove 10-3
- Light, Battery Preheat Indicator
  - Remove/Install 9-193
- Light Dimming Resistor, Position
  - Install 9-283
  - Remove 9-282
- Light Flasher, Anticollision
  - Install 9-274
  - Remove 9-272
- Light Support, Tail
  - Clean, Inspect, and Repair 2-275
  - Remove/Install 2-277
- Light, Tail Position
  - Install 9-281
  - Remove 9-280
- Light (Typical), Anticollision
  - Install 9-270
  - Remove 9-269
- Light (Typical), Flood
  - Install 9-277
  - Remove 9-276
- Light (Typical), Side Position
  - Install 9-279
  - Remove 9-278
- Light, Utility
  - Install 9-291
  - Remove 9-290

SUBJECT PAGE

L (Cont)

- Lighting Control Knob on Overhead Console (Typical)
  - Remove/Install 9-316
- Lights, Battery Preheat Indicator
  - Clean, Inspect, and Repair 9-192
  - Remove/Install 9-193
- Lights (Typical)
  - Clean, Inspect, and Repair 9-266
- Linear Variable Differential Transformer (LVDT), TAMS
  - Clean, Inspect, and Repair 9-468
  - Remove/Install 9-470
- Link Assembly Bushings (AVIM)
  - Remove/Install 11-374
- List of Maintenance Action Precise Symptom (MAPS) .... Appendix K
- Loading Data G-11
- Location and Description of Major Components 1-5
  - Engine 1-5
  - Engine-to-Transmission Driveshaft 1-5
  - Flight Controls 1-5
  - Landing Gear 1-5
  - Main Rotor Blades 1-5
  - Main Rotor Hub 1-5
  - Main Transmission 1-5
  - Rotating Controls 1-5
  - Tail Rotor Gearbox 1-5
  - Tail Rotor Hub and Blade Assembly and Rotating Controls 1-5
- Loss of Grease from Hanger Bearing(s) K-14
- Low Oil Level in Transmission With High Oil Level in Engine K-5
- Lower Anticollision Light Does Not Flash (ANTI COLL Switch in ANTI COLL) K-531
- Lower Chip Detector 6-72
- Lower Overhead Console 9-307
- Lower Transmission Boot Assembly
  - Remove/Install, Clean, and Inspect 6-38
- Lower Window
  - Clean, Inspect, and Repair 2-127
  - Remove/Install 2-124
- Lower Wire Cutter
  - Clean, Inspect, and Repair 2-73
  - Remove/Install 2-71
- Lubrication 1-66

SUBJECT PAGE

M

- Main Rotor Autorotation RPM, Adjust 5-333
- Main Rotor Blade
  - Core Repair (AVIM) 5-143
  - Inspect 5-107
  - Installation/Replacement Polyurethane Tape On 5-154
  - Refinish (AVIM) 5-123
  - Remove/Install 5-18
  - Remove/Install Off Helicopter 5-16
  - Remove/Install Trim Tab (AVIM) 5-127
  - Remove/Replace Erosion Strip Splice Cover (AVIM) 5-141
  - Repair Erosion Shield 5-130
  - Repair Erosion Strip Splice Cover 5-135
  - Repair Inboard Erosion Strip 5-146
  - Repair Outboard Erosion Strip 5-132
  - Repair Skin by Patching (AVIM) 5-115
  - Repair Trailing Edge 5-131
  - Repair Trim Tab 5-121
  - Repair Replacement, Inboard Erosion Strip (AVIM) 5-136
- Main Rotor Blade Bolt
  - Clean, Inspect, and Repair 5-27
- Main Rotor Blades E-24
  - Fold/Unfold 1-74
  - Intermediate Storage E-24
- Main Rotor Controls Antidrive Lever (AVIM)
  - Clean, Inspect, and Repair 5-229
- Main Rotor Controls Antidrive Lever
  - Install 5-233
  - Remove 5-228
- Main Rotor Controls Antidrive Link (AVIM)
  - Clean, Inspect, and Repair 5-236
- Main Rotor Controls Antidrive Link
  - Install 5-240
  - Remove 5-235
- Main Rotor Controls Boot
  - Remove/Install 5-203
- Main Rotor Controls Collective Lever (AVIM)
  - Clean, Inspect, and Repair 5-209
- Main Rotor Controls Collective Lever
  - Install 5-214
  - Remove 5-207

SUBJECT PAGE

M (Cont)

- Main Rotor Controls Collective Link (AVIM)
  - Clean, Inspect, and Repair 5-219
- Main Rotor Controls Collective Link
  - Install 5-223
  - Remove 5-217
- Main Rotor Controls Drive Hub Set (AVIM)
  - Clean, Inspect, and Repair 5-185
- Main Rotor Controls Drive Hub Set
  - Install 5-189
  - Remove 5-182
- Main Rotor Controls Drive Lever (AVIM)
  - Clean, Inspect, and Repair 5-177
- Main Rotor Controls Drive Lever
  - Install 5-180
  - Remove 5-175
- Main Rotor Controls Drive Link (AVIM)
  - Clean, Inspect, and Repair 5-169
- Main Rotor Controls Drive Link
  - Install 5-173
  - Remove 5-168
- Main Rotor Controls Gimbal Ring (AVIM)
  - Clean, Inspect, and Repair 5-195
- Main Rotor Controls Gimbal Ring
  - Install 5-200
  - Remove 5-192
- Main Rotor Controls Spacer
  - Clean, Inspect, and Repair 5-225
- Main Rotor Drive Ring Set
  - Clean, Inspect, and Repair (AVIM) 5-91
  - Remove/Install (AVIM) 5-89
- Main Rotor Droop Stop Plugs
  - Clean, Inspect, and Repair 5-34
  - Remove/Install 5-29
- Main Rotor Droop Stop Studs
  - Clean, Inspect, and Repair 5-42
  - Remove/Install 5-37
- Main Rotor Expandable Bolt
  - Clean, Inspect, and Repair 5-25
  - Remove/Install 5-21
- Main Rotor Expandable Bolt On Lanyard
  - Remove/Install 5-24
- Main Rotor Grip Assembly
  - Clean, Inspect, and Repair 5-84

SUBJECT PAGE

M (Cont)

- Main Rotor Grip Assembly and Adapter Assembly
  - Remove/Install 5-104
- Main Rotor Grip Bushings/Pins/Inserts (AVIM)
  - Remove/Install 5-86
- Main Rotor Grip Lead Lag Bearings (AVIM)
  - Clean, Inspect, and Repair 5-76
- Main Rotor Grip Lead Lag Bearings (AVIM)
  - Remove/Install 5-74
- Main Rotor Hub and Blade Assembly 5-1, E-24
  - Install 5-7
  - Intermediate Storage E-24
  - Remove 5-4
- Main Rotor Hub Damper (AVIM)
  - Clean, Inspect, and Repair 5-52
  - Remove/Install 5-47
- Main Rotor Hub Damper Shims (AVIM)
  - Remove/Install 5-55
- Main Rotor Hub Lower Cone
  - Clean, Inspect, and Repair 5-14
- Main Rotor Hub Lower Plate
  - Clean, Inspect, and Repair 5-94
- Main Rotor Hub Shear Bearings (AVIM)
  - Clean, Inspect, and Repair 5-63
  - Remove/Install 5-61
- Main Rotor Hub Upper Plate
  - Clean, Inspect, and Repair 5-58
- Main Rotor Hub Yoke
  - Clean, Inspect, and Repair 5-101
- Main Rotor Mast Assembly
  - Install 6-165
  - Remove 6-136
- Main Rotor Mast Assembly (AVIM)
  - Assemble 6-159
  - Disassemble 6-138
- Main Rotor Pitch Horn Assembly (AVIM)
  - Clean, Inspect, and Repair 5-69
- Main Rotor Pitch Horn Assembly
  - Remove/Install 5-67
- Main Rotor Pitch Horn Bushings (AVIM)
  - Remove/Install 5-72
- Main Rotor Pitch Link
  - Clean, Inspect, and Repair 5-162
  - Install 5-165
  - Remove 5-161
- Main Rotor Pitch Link Horn Attaching Hardware
  - Remove/Install 5-45

SUBJECT PAGE

M (Cont)

- Main Rotor Rotating Controls 5-160
- Main Rotor Swashplate Inner Ring, Inspect for Rotational Movement 5-301
- Main Rotor Swashplate and Support
  - Clean, Inspect, and Repair 5-242
  - Install 5-298
  - Remove 5-249
- Main Rotor Swashplate and Support (AVIM)
  - Assemble 5-284
  - Disassemble 5-251
- Main Rotor Swashplate and Support Components (AVIM)
  - Clean, Inspect, and Repair 5-257
  - Paint 5-280
- Main Rotor Swashplate Uniball Friction
  - Check and Adjust 5-244
- Main Rotor Tracking and Dynamic Balancing Procedures 5-303
- Main Rotor Upper Cone Plate Assembly
  - Clean, Inspect, and Repair 5-11
- Main Rotor Yoke Adapter Assembly
  - Clean, Inspect, and Repair 5-79
- Main Rotor Yoke Adapter Mount Bushings (AVIM)
  - Remove/Install 5-82
- Main Rotor Yoke Buffers (AVIM)
  - Remove/Install 5-96
- Main Rotor Yoke Bumpers (AVIM)
  - Remove/Install 5-99
- Main Transmission 6-28
  - Serviceability Check of 6-3
- Maintenance B-1
  - Allocation Chart B-1, B-6
  - Categories and Work Times B-5
  - Flyable Storage E-4
  - Intermediate Storage E-26
  - Preservation of Helicopter During Short Term Storage E-12
- Maintenance Action Precise Symptom (MAPS), List of Appendix K
- Maintenance Allocation Chart B-1, B-6
- Maintenance Allocation Chart —
  - Introduction B-1
  - Use of the B-2
- Maintenance Categories and Work Times B-5
- Maintenance Forms and Records 1-2,
- Maintenance Functions B-3, B-5
- Maintenance of Preservation During Flyable Storage E-6

SUBJECT PAGE

M (Cont)

Maintenance Step, (Left Side)
  Clean, Inspect, and Repair 2-130
  Remove/Install 2-129
Manifold, Pressure
  Remove/Install 7-41
Manifold, Return
  Remove/Install 7-38
Manual, How to Use This iv
Manufactured Items, List of (AVUM, AVIM) Part Number Index H-1
(MAPS), Maintenance Action Precise Symptom, List of .... Appendix K
Mast Assembly (AVIM), Components of the Main Rotor
  Clean, Inspect, and Repair 6-143
Mast Assembly (AVIM), Main Rotor
  Assemble 6-159
  Disassembly 6-138
Mast Assembly, Main Rotor
  Install 6-165
  Remove 6-136
Mast Bearing Chip Detector Fuzz Burner Failure - Special Test Tool LED Does Not Flash When Test Switch is Set to ON K-312
Mast Mounted Sight (MMS) Control Panel Not Lit After INST LT Control is Turned From OFF to BRT K-495
Mast Mounted Sight (MMS) Interface — Operational Check 9-100
Mast Torque Bit J-12
Mast Torque Calibration — Operational Check 9-99
Metal Particles Contamination — Compound Oil, Table 6-1-1 6-34
MFD BIT Page, CDS Fault CODE 01 is Displayed (Right MCPU Failed) K-166
MFD BIT Page, CDS Fault CODE 02 is Displayed (Left MCPU Failed) K-168
MFD BIT Page, CDS Fault CODE 04 is Displayed (Keyboard Unit Failed) K-170
MFD BIT Page, CDS Fault CODE 10 is Displayed (Right MFD Failed) K-172
MFD BIT Page, CDS Fault CODE 12 is Displayed (Left MFD Failed) K-174
MFD CPO Circuit Breaker Does Not Turn on CPO MFD (BATT 1 Switch Set to BATT 1) K-107
MFD CPO Circuit Breaker Does Not Turn on CPO MFD (DC External Power On) K-175

SUBJECT PAGE

M (Cont)

MFD CPO Does Not Come On (BATT 2 Switch Set to BATT 2) K-258
MFD (CPO) Key Has No Response During SWITCH CHECK K-182
MFD Does Not Come On (Battery 1 or Battery 2 On) K-254
MFD Does Not Display Intitial Page on Power Up, and Image is Not Legible and Clear K-184
MFD Initial Page Does Not Display MMS ON K-187
MFD Intitial Page Time Function is Not Counting Up in Time K-97
MFD (Pilot) Key Has No Response During SWITCH CHECK K-182
MFD PLT Circuit Breaker Will Not Stay Closed K-191
MFD SWITCH CHECK Function Cannot Be Disabled K-195
MFD Test Pattern Display Absent or Incorrect K-194
Minimum Friction on Collective System, Adjustment of 11-86
Miscellaneous Electrical Equipment
  Clean, Inspect, and Repair 9-300
Miscellaneous Instruments 8-88
Mission Equipment 1-35, 16-1
Mixing Lever Supports
  Remove/Install 11-49
Mixing Valve (AVIM) 13-5
  Mixing Valve
  Assemble 13-7
  Clean, Inspect, and Repair 13-5
  Disassemble 13-3
  Heat 13-1
  Install 13-9
  Remove 13-2
MMS Bit J-9
MMS UP Advisory Message is Not Displayed on MFD and MMS FAIL is Displayed K-153
Monitor, Charger
  Clean, Inspect, and Repair 9-195
  Remove/Install 9-198
Moor Helicopter 1-87
Motor Intake Duct Assembly, Avionic Cooling System
  Remove/Install 9-487

SUBJECT PAGE

M (Cont)

- Mount Bolt
  - Clean, Inspect, and Repair 2-308
- Mount, Corner, Clean and Inspect 2-298
- MPD Does Not Display Battery 1 Voltage (BATT 1 Switch Set to BATT 1) K-198
- MPD Does Not Display Battery 2 Voltage (BATT 2 Switch Set to BATT 2) K-196
- MPD Does Not Illuminate or Digital Readout Does Not Indicate Approximately 28 K-23
- MPD Does Not Indicate 115 and Particle Separator Does Not Operate (AC External Power On) K-259
- Multiparameter Display BRT Control Knob
  - Remove/Install 8-8
- Multiparameter Display Fuse(s) (Typical)
  - Remove/Install 8-9
- Multiparameter Display (MPD) (AVIM)
  - Assemble 8-16
  - Clean, Inspect, and Repair 8-12
  - Disassemble 8-11
- Multiparameter Display (MPD)
  - Remove/Install 8-10
- Multiparameter Display (MPD) Not Lit After CONSOLE LT Control is Turned From OFF BRT K-519
- Multiplex (1553) (MUX) Data Bus — Operational Check 9-104
- MUX BUS Status J-15

N

- Names and Designators, Common Name 1-2
- Navigation Instruments 8-87
- NG Cable, Uniball, Bearing, Aft
  - Remove/Install 4-116
- NG Engine Control Cable
  - Remove/Install 4-104
  - Rig 4-100
- NG Engine Control Cable Aft Support Bracket,
  - Remove/Install 4-121
- Night Vision Goggles (NVG) Power Supply — Operational Check 9-120
- Night Vision Power Supply
  - Clean, Inspect, and Repair 9-292
- Night Vision Power Supply (Typical)
  - Install 9-295
  - Remove 9-294

SUBJECT PAGE

N (Cont)

- No Fuel Flow to Engine Driven Pump K-745
- Nomenclature Cross-Reference List 1-2
- Nut, Tee, Retainer and Packing
  - Remove/Install 7-30

O

- OH-58D, Helicopter Description 1-10
- Oil and Filter, Transmission,
  - Drain/Service 1-53
- Oil Cooler
  - Install 6-366
  - Remove 6-360
- Oil Cooler, Build Up and
  - Clean, Inspect, and Repair 6-362
- Oil Cooler Bypass Valve
  - Clean, Inspect, and Repair 4-85
  - Remove/Install 4-82
- Oil Cooler Duct
  - Clean, Inspect, and Repair 6-369
  - Remove/Install 6-368
- Oil Cooler Fairing Seals, Remove/Install 4-94
- Oil Drain Valve
  - Clean, Inspect, and Repair 6-355
  - Remove/Install 6-353
- Oil Filter Assembly (Engine Scavenge)
  - Remove/Install 4-98.2
- Oil Filter Bypass Valve Assembly
  - Clean, Inspect, and Repair 6-339
  - Remove/Install 6-337
- Oil Filter Element (Engine Scavenge)
  - Remove/Install 4-98
- Oil Filter Inlet Hose
  - Remove/Install 6-345
- Oil Filter Manifold
  - Clean, Inspect, and Repair 6-330
  - Remove/Install 6-326
- Oil Filter, Rubber Particles Found During Inspection of K-7
- Oil Filters, Transmission
  - Remove/Install 6-321
- Oil Jets (Number One and Two), Transmission
  - Clean, Inspect, and Repair 6-344
  - Remove/Install 6-341
- Oil Level Switch, Remove/Install 4-73
- Oil Level Switch Does Not Close K-375

SUBJECT PAGE

O (Cont)

Oil Level Switch Does Not Open K-376
Oil Pressure Regulator Valve
  Adjust 6-333
  Clean, Inspect, and Repair 6-335
  Remove/Install 6-332
Oil Pressure Switch
  Clean, Inspect, and Repair 6-348
  Remove/Install 6-346
Oil Pressure Transducer
  Clean, Inspect, and Repair 6-351
  Remove/Install 6-349
Oil Pressure Transmitter
  Remove/Install 4-29
Oil Pump, Transmission
  Clean, Inspect, and Repair 6-320
  Remove/Install 6-317
Oil Seal (AVIM), Output, Freewheeling Unit Tail Rotor Drive
  Remove/Install 6-206
Oil Service Door, Engine, on Aft Fairing Assembly
  Remove/Install 2-70
Oil System 6-314
Oil System, Engine, Drain/Service 1-49
Oil Tank
  Disassemble/Assemble 4-72
Oil Tank Assembly
  Clean, Inspect, and Repair 4-71
  Remove/Install 4-69
Oil Tank Cap and Adapter Assembly
  Remove/Install 4-81
Oil Tank Drain Valve
  Remove/Install 4-80
Oil Tank Sight Glass
  Remove/Install 4-76
Oil Tank Support and Oil Cooler Support Duct
  Clean, Inspect, and Repair 4-88
Oil Temperature Transducer
  Remove/Install 4-78
Oils, Approved, Table 1-2 1-63
Open Port Refueling, Gravity or (Power Off or Rapid) 1-42
Operation, Principles of 1-11
Operational Check
  AC Electrical Power System
    (Engine Operating) 9-3
    (Inverter Operation) 9-8
  Anticollision Lights 9-165

SUBJECT PAGE

O (Cont)

Operational Check (Cont)
  Battery Charger-Monitor 9-10
  Battery No. 1 9-17
  Battery No. 2 9-24
  Clock 8-95
  Console Lights 9-158
  Control Display System (CDS) Fault Detection Locator 9-38
  Control Display System (CDS) Interface 9-30
  Electrical 9-1
  Engine, Rotor, and Transmission Instruments 8-27
  Environmental Electrical System 9-76
  External Power AC 9-83
  External Power DC 9-89
  Floodlights 9-151
  Hydraulic System 7-6
  Instrument Lights 9-155
  Mast Mounted Sight (MMS) Interface 9-100
  Mast Torque Calibration 9-99
  Multiplex (1553) (MUX) Data Bus 9-104
  Night Vision Goggles (NVG) Power Supply 9-120
  Pitot-Static and Air Data System 8-56
  Pitot Tube Heater 8-82
  Position Lights 9-163
  Power Plant Electrical System 9-134
  SCAS and Hydraulic Electrical System 9-171
  Searchlight 9-167
  Standby Airspeed Indicator 8-49
  Standby Altimeter 8-38
  Standby Attitude Indicator 8-44
  Standby Compass 8-89
  Starter-Generator and Control 9-107
  Transformer Rectifier Unit (TRU) 9-114
  Transmission Attitude Measurement System 9-123
  Transmission Electrical System 9-127
  Utility Light 9-153
Operational Check and Troubleshooting 7-1, K-17
Outside Air Thermometer
  Clean, Inspect, and Remove/Install 8-101
Overhaul and Retirement Schedule 1-155
Overhead Console
  Lower 9-307
  Raise 9-307
Overheat Switch, Heater
  Remove/Install 9-379

SUBJECT PAGE

O (Cont)

Overload Sensing Control
  Clean, Inspect, and Repair 9-225
  Remove/Install.......................... 9-227

P

Package and Preserve Transmission 6-49
Packing and Nut, Tee, Retainer
  Remove/Install.......................... 7-30
Paint Main Rotor Swashplate and Support
  Components (AVIM) 5-280
Panel Connector on Digital Fuel Control
  Panel, Integrally Lit
  Remove/Install.......................... 9-333
Panel, Digital Fuel Control
  Install 9-329
  Remove 9-328
Panel From CPO Auxiliary Switch Panel,
  Integrally Lit, Remove.................. 9-440
Panel From CPO Channel Select Switch,
  Integrally Lit, Remove.................. 9-438
Panel From Digital Fuel Control Panel,
  Integrally Lit, Remove.................. 9-330
Panel From MMS Control Panel,
  Integrally Lit, Remove/Install.......... 9-444
Panel From Overhead Console or Center
  Post Circuit Breaker Panel (Typical),
  Integrally Lit, Remove.................. 9-322
Panel From Pilot (MFD) Auxiliary Control
  Panel, Integrally Lit, Remove 9-442
Panel From SCAS Control Panel,
  Integrally Lit, Remove.................. 9-340
Panel, Left Access
  Remove/Install.......................... 2-175
Panel Lights Do Not Come On When
  CONSOLE LT Control is Turned
  From OFF to BRT......................... K-506
Panel On CPO Auxiliary Switch Panel,
  Integrally Lit, Install 9-441
Panel on CPO Channel Select Switch,
  Integrally Lit, Install 9-439
Panel On Digital Fuel Control Panel,
  Integrally Lit, Install 9-331
Panel On MMS Control Panel,
  Integrally Lit, Remove/Install.......... 9-445

SUBJECT PAGE

P (Cont)

Panel on Overhead Console or Center
  Post Circuit Breaker Panel (Typical),
  Integrally Lit, Install 9-326
Panel on Pilot Collective Stick,
  Integrally Lit, Remove/Install.......... 9-376
Panel On Pilot (MFD) Auxiliary Control
  Panel, Integrally Lit, Install 9-443
Panel On SCAS Control Panel,
  Integrally Lit, Install 9-341
Panel, SCAS Control
  Install 9-339
  Remove 9-338
Panel, Side, Engine Cowl Assembly
  Clean, Inspect, and Repair 2-64
  Remove/Install.......................... 2-63
Panel (Typical), Integrally Lit
  Clean, Inspect, and Repair 9-305
Panels, Honeycomb
  Clean, Inspect, and Repair 2-131
Park Helicopter........................... 1-82
Particle Separator
  Clean, Inspect, and Repair 4-60
  Remove/Install.......................... 4-59
Particle Separator Blower Does Not
  Operate (Ac External Power is On)....... K-392
Particle Separator Blower Operates
  Backward................................ K-395
Particle Separator Fan and Duct
  Install 4-58
  Remove 4-57
Pedal Adjustment and Support Assemblies
  Clean, Inspect, and Repair 11-398
Perform Engine To Transmission,
  Alignment 4-152
Pilot Collective Elbow Assembly
  Remove/Install.......................... 11-121
Pilot Collective Elbow Assembly Bearings
  Remove/Install.......................... 11-122
Pilot Collective Stick Assembly
  Remove/Install.......................... 11-89
Pilot Collective Stick Assembly
  Miscellaneous Parts
  Remove/Install.......................... 11-93
Pilot Collective Stick Control Panel Box
  Clean, Inspect, and Repair 11-97
Pilot Collective Stick Cover
  Remove/Install.......................... 11-44
Pilot Collective Stick Detent Button
  Clean, Inspect, and Repair 11-101

SUBJECT PAGE

P (Cont)

- ilot Collective Stick Elbow Assembly
  - Clean, Inspect, and Repair 11-107
- Pilot Collective Stick Inner Tube Assembly
  - Clean, Inspect, and Repair 11-109
- Pilot Collective Stick Outer Tube Assembly
  - Clean, Inspect, and Repair 11-105
- Pilot Collective Stick Ring Gears
  - Clean, Inspect, and Repair 11-111
- Pilot Collective Stick Throttle Arm
  - Clean, Inspect, and Repair 11-113
- Pilot Collective Stick Throttle Friction Plug
  - Clean, Inspect, and Repair 11-99
- Pilot Collective Stick Throttle Grip Assembly
  - Clean, Inspect, and Repair 11-103
- Pilot Cyclic Fitting Assembly Bearings (AVIM)
  - Remove/Install 11-330
- Pilot Cyclic Pivot Assembly
  - Clean, Inspect, and Repair 11-286
  - Remove/Install 11-280
- Pilot Cyclic Pivot Support Assembly
  - Remove/Install 11-332
- Pilot Cyclic Pivot Support Assembly Inserts
  - Remove/Install 11-333
- Pilot Cyclic Position Adjustment Rod End
  - Clean, Inspect, and Repair 11-304
  - Remove/Install 11-300
- Pilot Cyclic Position Adjustment Indicator Pin
  - Clean, Inspect, and Repair 11-312
  - Remove/Install 11-310
- Pilot Cyclic Position Adjustment Knob Assembly
  - Remove/Install 11-306
- Pilot Cyclic Stick Assembly
  - Remove/Install 11-314
- Pilot Cyclic Stick Fitting Assembly
  - Clean, Inspect, and Repair 11-328
  - Remove/Install 11-319
- Pilot Cyclic Stick Indicator Pin Retainer
  - Clean, Inspect, and Repair 11-288
- Pilot Cyclic Stick Pivot Assembly
  - Remove/Install 11-280
- Pilot Cyclic Stick Pivot Bearing
  - Clean, Inspect, and Repair 11-299
  - Remove/Install 11-298

SUBJECT PAGE

P (Cont)

- Pilot Cyclic Stick Stop
  - Clean, Inspect, and Repair 11-292
- Pilot Cyclic Tube Assembly
  - Clean, Inspect, and Repair 11-325
- Pilot Intercommunication System (ICS) Panel Not Lit After CONSOLE LT Control is Turned From OFF to BRT K-510
- Pilot Multifunction Display (MFD) Auxiliary Switch Panel Not Lit After INST LT Control is Turned From OFF to BRT K-494
- Pilot Night Vision Goggles (NVG) Do Not Come On When NVG Power Supply Switch is Set to ON K-291
- Pin and Cap Gasket, Hydraulic Reservoir Cover,
  - Remove/Install 7-61
- Pitch and Roll Engage Switch, SCAS
  - Remove/Install 9-342
- Pitch Change Mechanism, Tail Rotor 5-407
- Pitch Link Assembly, Collective
  - Clean, Inspect, and Repair 11-47
  - Remove/Install 11-45
- Pitch Link, Main Rotor
  - Install 5-165
  - Remove 5-161
- Pitch Rate Sensor
  - Clean, Inspect, and Repair 9-419
  - Remove/Install 9-421
- Pitch Rate Sensor Failure CODE 21 is Displayed on MFD K-200
- Pitch/Roll and Yaw Will Not Engage K-682
- Pitch/Roll and One Yaw Will Not Engage K-697
- Pitch and Roll (Only) Will Not Engage K-704
- Pitot-Static and Air Date Systems — Operational Check 8-56
- Pitot-Static Instrument and Air Data Systems 8-55
- Pitot-Static Tubing and Fittings
  - Clean, Inspect, and Repair 8-62
  - Install 8-75
  - Remove 8-70
- Pitot Tube
  - Clean, Inspect, and Repair 8-86
  - Remove/Install 8-84
- Pitot Tube Heater — Operational Check 8-82
- Pitot Tube Will Not Heat K-203
- Pivot Assembly Bearing (AVIM)
  - Remove/Install 11-294

SUBJECT PAGE

P (Cont)

- Plenum Assembly
  - Clean, Inspect, and Repair 13-32
  - Install 13-33
  - Remove 13-31
- Polyurethane Conductive Coatings, Copper Filled, Use of 2-99
- Polyurethane Top Coatings, Aliphatic, Use of 2-102
- Position Light (Typical), Side,
  - Install 9-279
  - Remove 9-278
- Position Light Dimming Resistor
  - Install 9-283
  - Remove 9-282
- Position Light, Tail
  - Install 9-281
  - Remove 9-280
- Position Lights Do Not Come On (LIGHT POS Switch Set to DIM) K-523
- Position Lights Do Not Get Bright When Switched From DIM to BRT K-526
- Position Lights — Operational Check 9-163
- Power Connector, DC External
  - Clean, Inspect, and Repair 9-220
  - Remove/Install 9-222
- Power Control Unit, AC External
  - Clean, Inspect, and Repair 9-261
  - Remove/Install 9-263
- Power Door Switch, AC External
  - Clean, Inspect, and Repair 9-234
  - Remove/Install 9-236
- Power Door Switch, DC External
  - Clean, Inspect, and Repair 9-210
  - Remove/Install 9-211
- Power, External
  - AC, Apply 1-105
  - Apply 28 VDC 1-103
- Power OFF, Electrical 9-208
- Power ON, Electrical 9-204
- Power Plant 4-1
- Power Plant Controls 4-99
- Power Plant Electrical System — Operational Check 9-134
- Power Plants, Auxiliary 15-1
- Power Receptacle, AC External
  - Clean, Inspect, and Repair 9-238
  - Remove/Install 9-240
- Power Reset Switch, AC External
  - Clean, Inspect, and Repair 9-243
  - Remove/Install 9-244

SUBJECT PAGE

P (Cont)

- Power Supply, Air Data
  - Remove/Install 8-97
- Power Supply, Night Vision
  - Clean, Inspect, and Repair 9-292
- Power Supply (Typical), Night Vision
  - Install 9-295
  - Remove 9-294
- Power Switch, SCAS, Remove/Install 9-348
- Power Train System E-4
  - Flyable Storage E-4
  - Intermediate Storage E-17
  - Short Term Storage E-8
- Preheat Indicator Lights, Battery
  - Clean, Inspect, and Repair 9-192
  - Remove/Install 9-193
- Preparation for Storage of Shipment 1-2
- Preservation E-6
  - Accident Engines E-26
  - Damaged, Cannibalized Failed Engine E-27
  - Flyable Storage E-6
  - Intermediate Storage E-26
  - Maintenance of During Storage E-6
  - Short Term Storage E-12
- Preserve and Package Transmission 6-49
- Pressure Manifold, Remove/Install 7-41
- Pressure Switch, Fuel, Remove/Install 10-30
- Pressure Switch, Manifolds, and Relief Valve 7-32
- Pressure Switch, Remove/Install 7-35
- Preventive Maintenance Inspection 1-133
- Principles of Operation 1-11
  - Airframe 1-11
  - Analog and Digital Instruments 1-37
  - Drive Train System 1-17
  - Electrical Systems 1-24
  - Emergency Equipment 1-37
  - Environmental Control Systems 1-32
  - Flight Controls 1-29
  - Fuel System 1-27
  - Hydraulic System 1-19
  - Instrument System 1-22
  - Landing Gear 1-11
  - Mission Equipment 1-35
  - OH-58D Helicopter 1-10
  - Power Plant 1-12
  - Rotors 1-15
  - Utility Systems 1-31
- Probe, Fuel and Indicating System, Check 10-69
- Probe, Fuel, Remove/Install 10-32

SUBJECT PAGE

P (Cont)

Procedures Common to All Categories of Storage E-2
  Corrosive Preventive E-2
  Drainage E-2
  Lubrication E-2
  Mooring E-2
  Parking E-2
  Preservation E-2
  Towing E-2
  Ventilation E-2
Pump, Boost
  Clean, Inspect, and Repair 10-41
  Install 10-42
  Remove 10-39
Pump, Engine Driven
  Fuel Flow Restricted to .... Appendix K
  No Fuel Flow to .... Appendix K
Pump, Hydraulic
  Clean, Inspect, and Repair 7-78
  Remove/Install 7-74
Pump, Transmission Oil
  Clean, Inspect, and Repair 6-320
  Remove/Install 6-317
Pushbutton Switch on Digital Fuel Control Panel (Typical), Remove/Install 9-335
Pylon, Clean and Inspect 2-281
Pylon Fitting Assembly
  Remove, Install, Clean and Inspect 6-77

Q

Quality Assurance/Quality Control (QA/QC) 1-2
Quantity Control Unit, Fuel
  Remove/Install 9-436
Quick-Disconnect Coupling Halves
  Clean, Inspect, and Repair 4-93
Quick-Disconnect Self-Sealing Coupling Half (Typical), Remove/Install 7-32

R

Radar Altimeter Bit J-10
Radar Warning Panel Not Lit After CONSOLE LT Control is Turned From OFF to BRT K-513

SUBJECT PAGE

R (Cont)

Radio Bit J-13
Raise Overhead Console 9-309
Rate Sensor, Pitch
  Clean, Inspect, and Repair 9-419
  Remove/Install 9-421
Rate Sensor, Roll
  Clean, Inspect, and Repair 9-423
  Remove/Install 9-425
Rebonding of Sleeve to Fin Assembly and Repair Minor Puncture Damage 2-252
Recall, Last Flight J-5
Receiver Assembly
  Remove, Inspect, Repair, and Install 10-35
Receptacle, AC External Power
  Clean, Inspect, and Repair 9-238
  Remove/Install 9-240
Recommendations (EIR) 1-3
RECT FAIL Caution Message Not Displayed on MFD (RECT Circuit Breaker Open and AC and DC External Power Applied) K-205
References A-1
Refinish Main Rotor Blade (AVIM) 5-123
Refueling
  Closed Circuit (Power Off or Rapid) 1-40
  Gravity or Open Port (Power Off or Rapid) 1-42
Regulator, Voltage
  Clean, Inspect, and Repair 9-359
  Remove/Install 9-231
Relay (Typical), Remove/Install 9-381
Relief Valve, Remove/Install 7-44
Remote Control Circuit Breaker
  Install 9-359
  Remove 9-356
Remote Frequency Display (RFD) is Not Lit After INST LT Control is Turned From OFF to BRT K-502
Remote Sensor
  Clean, Inspect, and Repair 13-13
  Remove/Install 13-12
Remove
  AC Generator 9-248
  Air Data Transducer 8-66
  Air Induction Cowl 4-48
  Anticollision Light Flasher 9-272
  Anticollision Light (Typical) 9-268
  Avionic Cooling System Blower 9-481
  Boost Pump 10-39
  Circuit Breaker From DC Equipment Electrical Assembly (Typical) 9-352

SUBJECT PAGE

R (Cont)

- Remove (Cont)
  - Circuit Breaker From Nose Compartment (Typical) 9-363
  - Cyclic Friction Knob and Shaft 11-237
  - Cyclic Torque Tube 11-212
  - Digital Fuel Control Panel 9-328
  - Directional Control Pedals From Support Assembly 11-397
  - Electrical Wiring and Cabling in Avionics Compartment 10-77
  - Engine Assembly 4-2
  - Engine Electronic Control 9-456
  - Fan Shaft Assembly 6-248
  - Flood Light (Typical) 9-276
  - Fore-and-Aft Cyclic Transducer 11-233
  - Freewheeling Unit 6-168
  - Fuel Shutoff Lever 10-3
  - Fuel Sump 10-34
  - Integrally Lit Panel From CPO Auxiliary Switch Panel 9-440
  - Integrally Lit Panel From CPO Channel Select Switch 9-438
  - Integrally Lit Panel From Digital Fuel Control Panel 9-330
  - Integrally Lit Panel From Overhead Console or Center Post Circuit Breaker Panel (Typical) 9-322
  - Integrally Lit Panel From Pilot (MFD) Auxiliary Control Panel 9-442
  - Integrally Lit Panel From SCAS Control Panel 9-340
  - Landing Gear 3-5
  - Lateral Cyclic Transducer 11-230
  - Lateral Magnetic Brake 11-208
  - Left Cyclic Yoke 11-221
  - Main Rotor Controls Antidrive Lever 5-228
  - Main Rotor Controls Antidrive Link 5-235
  - Main Rotor Controls Boot 5-203
  - Main Rotor Controls Collective Lever 5-207
  - Main Rotor Controls Collective Link 5-217
  - Main Rotor Controls Drive Lever 5-175
  - Main Rotor Controls Drive Link 5-168
  - Main Rotor Controls Drive Hub Set 5-182
  - Main Rotor Controls Gimbal Ring 5-192
  - Main Rotor Hub and Blade Assembly 5-4
  - Main Rotor Mast Assembly 6-136
  - Main Rotor Pitch Link 5-161
  - Main Rotor Swashplate and Supports 5-249
  - Mixing Valve 13-2

SUBJECT PAGE

R (Cont)

- Remove (Cont)
  - Night Vision Power Supply (Typical) 9-294
  - Oil Cooler 6-360
  - Particle Separator Fan and Duct 4-57
  - Pitot-Static Tubing and Fittings 8-70
  - Plenum Assembly 13-31
  - Position Light Dimming Resistor 9-282
  - Remote Control Circuit Breaker 9-356
  - Right Cyclic Yoke 11-225
  - Rotor Tiedowns 1-91
  - SCAS Control Panel 9-338
  - Searchlight 9-284
  - Shunt (Typical) 9-391
  - Side Position Light (Typical) 9-278
  - Signal Conditioning Unit (Mast Torque) 9-461
  - Signal Conditioning Unit (TAMS) 9-465
  - Standby Airspeed Indicator 8-53
  - Standpipe Electrical Assembly 6-81
  - Tailboom 2-198
  - Tail Position Light 9-280
  - Tail Rotor Assembly 5-355
  - Tail Rotor Control Tube Driver Plate 5-345
  - Tail Rotor Crosshead 5-350
  - Tail Rotor Pitch Change Control Tube 5-436
  - Tail Rotor Pitch Change Idler 5-428
  - Tail Rotor Pitch Change Levers 5-417
  - Tail Rotor Pitch Change Rod Assembly 5-412
  - Tail Rotor Pitch Link 5-340
  - Torquemeter Support and Bearing Assembly 6-92
  - Torquemeter System Antibacklash Adapter Assembly 6-122
  - Transmission 6-31
  - Utility Light 9-290
- Remove, Clean, Inspect, Repair, and Install Hydraulic Filter Assembly 7-15
- Remove, Inspect, Repair, and Install Receiver Assembly 10-55
- Remove, Inspect, and Install Fire Extinguisher 17-2
- Remove, Inspect, and Install First Aid Kit 17-3
- Remove/Install
  - AC External Power Control Unit 9-263
  - AC External Power Door Switch 9-236
  - AC External Power Receptacle 9-240
  - AC External Power Reset Switch 9-244
  - Access Door 2-24
  - Actuator Idler Bearing (AVIM) 11-449
  - Actuator Support Assembly 11-164

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
  Actuator Support Bushing (AVIM) 11-452
  Adapter 7-100
  Adapter, Bearing Hanger and Segmented Shaft (Typical) 6-236
  Adjustable Tube Assembly 11-161
  Adjustable Tube Assembly (Typical) 11-254
  Adjustable Tube Assembly Rod End Bearing (Typical) 11-260
  Aft Crosstube 3-34
  Aft Crosstube Components 3-37
  Aft Crosstube Support Beam and Components 3-43
  Aft Crosstube Support Beam Bushings (AVIM) 3-47
  Aft Fairing Assembly 2-67
  Aft NG Cable Uniball Bearing 4-116
  Aft Shaft Assembly 6-223
  Air Data Power Supply 8-69
  Air Induction Cowl Access Door 4-55
  Alternator Control Unit 9-255
  Armor Seat Panels 2-48
  Autotransformer 28V 9-259
  AUX RCPT Circuit Breaker, 28 VDC 9-452
  Avionic Cooling System Flexible Air Duct Coupling 9-490
  Avionic Cooling System Motor Intake Duct Assembly 9-487
  Avionic Cooling System Thermo Switch (Typical) 9-488
  Back Cushion 2-45
  Batteries (Forward and Aft) 9-187
  Battery Preheat Indicator Light 9-193
  Bearing Hanger, Bearing, Impeller, Fan Shaft and Blower Housing 6-251
  Bearing In Force Gradient Cylinder (AVIM) 11-194
  Bellmouth 4-188
  Bleed Air Heater Tube and Gasket 4-30
  Boosted Bellcrank Assembly 11-270
  Boosted Tube Assembly 11-278
  Breather Tube Assembly 6-73
  Bulb P/N 56B3C (for Air Data System) 8-64
  Bushings 7-97
  Cabin Roof Skylight 2-121
  Cable Assembly 10-18
  Cap, Spring and Rod End Assemblies 2-316
  Cartridge 10-44
  Center Console Top Cover 11-485
  Center Post Duct 2-112

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
  Charger-Monitor 9-198
  Circuit Breakers in Overhead Console (Typical) 9-310
  Circuit Breaker in Center Post Circuit Breaker Panel (Typical) 9-312
  Clock 8-100
  Clogged Oil Drain Tubes 4-95
  Collective Adjustable Tube Assembly 11-136
  Collective Adjustable Tube Assembly Clevis 11-138
  Collective and Cyclic Actuator Mount Bushings 11-149
  Collective Boosted Bellcrank Assembly . . . 11-151
  Collective Control Input Valve Bellcrank Assembly 11-176
  Collective Control Link Assembly 11-140
  Collective Control Panel Assembly Integrally Lit Panel 11-124
  Collective Friction Knob and Shaft 11-171
  Collective Friction Knob and Shaft Pin 11-173
  Collective Hydraulic Actuator 7-105
  Collective Jackshaft Adjustable Nut 11-77
  Collective Jackshaft Assembly 11-72
  Collective Jackshaft Friction Adjustment Bearing 11-78
  Collective Jackshaft Shim and Spacer 11-79
  Collective Jackshaft Spacers 11-73
  Collective Jackshaft Support Clamp 11-84
  Collective Jackshaft Tube Assembly 11-83
  Collective Mixing Lever Assembly 11-133
  Collective Mixing Lever Assembly Bushings 11-135
  Collective Pitch Link Assembly 11-45
  Collective Plate Assembly 11-174
  Collective Stick Tiedown Strap 11-43
  Collective Transducers 11-57
  Combining Bellcrank Bearing Sleeve (AVIM) 11-412
  Console or Instrument Dimming Control 9-371
  Control Support Assembly 11-157, 11-277
  Control Support Assembly Bushings (AVIM) 11-160
  Controls Adjustable Tube Assembly 11-269
  Copilot Collective Elbow Assembly 11-125
  Copilot Collective Elbow Assembly Bushing 11-132

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
- Copilot Collective Elbow Assembly Insert 11-131
- Copilot Collective Stick Assembly 11-71
- Copilot Collective Stick Assembly Plug 11-62
- Copilot Collective Stick Tube Assemblies 11-63
- Copilot Cyclic Stick 11-334
- Corner Mount, Stop Nut and/or Stop-Down Assembly 2-283
- Coupling Disc Pack (Typical) 6-229
- CPO Channel Select Switch 9-437
- Cpo Cyclic Stick Fitting Assembly Bearings (AVIM) 11-350
- CPO Cyclic Stick Gimble Assembly Bushing (AVIM) 11-347
- CPO Cyclic Stick Gimble, Fitting, Plate, and Support Assemblies 11-338
- CPO Cyclic Stick Housing Assembly Bearings (AVIM) 11-382
- CPO Cyclic Stick Lockout Catch 11-242
- CPO Cyclic Stick Plate Assembly Bearing (AVIM) 11-360
- CPO Cyclic Stick Quick-Disconnect Lever and Link Assembly 11-366
- CPO Cyclic Stick Quick-Disconnect Lever Bushings (AVIM) 11-370
- CPO Cycic Stick Socket Housing, and Housing Assembly 11-376
- CPO Cyclic Stick Socket Housing Bushings (AVIM) 11-386
- CPO Cyclic Stick Stud Assembly 11-362
- CPO Cyclic Stick Support Assembly Bearing (AVIM— 11-356
- CPO Cyclic Stick Tube Assembly 11-388
- Crew Door 2-27
- Crew Door Jettison Mechanism 2-29
- Crew Seat and Floor Panel 2-47
- Cyclic Hydraulic Actuator 7-108
- Cyclic Mixer Bellcrank Assembly 11-243
- Data Bus Coupler or Terminator (Typical) 9-429
- DC External Power Connector 9-222
- DC External Power Door Switch 9-211
- Defogging Blower 13-34
- Defuel Valve 10-46
- Diode 9-367
- Directional Control Actuator Input Idler Assembly 11-447

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
- Directional Control Adjustable Tube Bearing (Typical) 11-446
- Directional Control Aft Walking Beam 11-474
- Directional Control Aft Walking Beam Bearing (AVIM) 11-477
- Directional Control Boosted Tube 11-471
- Directional Control Combining Bellcrank 11-409
- Directional Control Eyebolt and Spring 11-413
- Directional Control Force Gradient 11-454
- Directional Control Force Gradient Bearing and Sleeve 11-458
- Directional Control Force Gradient Spring, Guides, or Shaft 11-463
- Directional Control Force Gradient Switch (AVIM) 11-460
- Directional Control Forward Walking Beam 11-442
- Directional Control Lower Aft Horizontal Tube 11-427
- Directional Control Lower Forward Horizontal Tube 11-415
- Directional Control Lower Tunnel Bellcrank 11-430
- Directional Control Lower Tunnel Bellcrank Bushing 11-432
- Directional Control Nonboosted Tube 11-444
- Directional Control Pedal Adjustment and Support Assembly 11-395
- Directional Control Pedal Bearing (AVIM) 11-402
- Directional Control Pedal Bellcrank 11-405
- Directional Control Pedal Bellcrank Bushing and Bearing (AVIM) 11-406
- Directional Control Pedal Tube 11-407
- Directional Control Rotary Actuator 11-466
- Directional Control Servoactuator 7-93
- Directional Control Servoactuator Support 11-451
- Directional Control Tailboom Tube 11-479
- Directional Control Transducer 11-424
- Directional Control Transducer Bellcrank and Support 11-418
- Directional Control Upper Horizontal Tube 11-437
- Directional Control Upper Tunnel Bellcrank 11-435
- Directional Control Vertical Tube 11-433
- Dual Tachometer 8-26

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
  Electrical Connector Beneath CPO Switch 9-450
  Engine Control Cable Bellows Assembly 4-124
  Engine Cowl Assemblies 2-58
  Engine Cowl Assembly Side Panel 2-63
  Engine Mount Legs 4-136
  Engine Oil Service Door on Aft Fairing Assembly 2-70
  Engine Scavenge Oil Filter Assembly 4-98 2
  Engine Scavenge Oil Filter Element 4-98
  Engine to Transmission Driveshaft 6-21
  Engine Vent and Fuel Supply Hoses 10-21
  Eyebolt 3-20
  Fan Shaft Bearing Hanger Brackets (Forward and Aft) 6-268
  Fin Assembly 2-267
  Flex Hose (Typical) 7-26
  Footswitch (Typical) 9-446
  Fore-and-Aft Force Gradient 11-187
  Fore-and-Aft Magnetic Brake 11-196
  Forward Crosstube 3-23
  Forward Crosstube Components 3-28
  Forward Fairing Assembly 2-52
  Forward Firewall Assembly 4-178
  Forward Firewall Seals 4-189
  Forward Shaft Assembly 6-219
  Freewheeling Unit Tail Rotor Drive Output Adapter Wear Sleeve (AVIM) 6-210
  Freewheeling Unit Tail Rotor Output Shaft Support Bearing (AVIM) 6-208
  Freewheeling Unit Tail Rotor Output Oil Seal (AVIM) 6-206
  Fuel Cell 10-58
  Fuel Cell Vent Hose 10-28
  Fuel Control Clevis 4-131
  Fuel Control Lever 4-128
  Fuel Differential Pressure Switch 4-133
  Fuel Pressure Switch 10-30
  Fuel Probe 10-32
  Fuel Quantity Control Unit 9-436
  Fuel Shutoff Valve 10-12
  Ground Module (Typical) 9-406
  Heater Control Cable 13-15
  Heater Overheat Switch 9-379
  Heating and Ventilation System Ducts 13-21
  Horizontal Stabilizer 2-273
  Hose, Tube, or Packing (Typical) 4-32
  Hydraulic Pump 7-80

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
  Hydraulic Reservoir Assembly 7-58
  Hydraulic Reservoir Cover Latch Assembly 7-63
  Hydraulic Reservoir Cover Pin and Cap Gasket 7-61
  Hydraulic Reservoir Return Port Union 7-65
  Hydraulic Reservoir Sight Plug 7-67
  Hydraulic Reservoir Strainer and Cover Gasket 7-68
  Hydraulic Screen 7-70
  Hydraulic Solenoid Valve 7-47
  Hydraulic Solenoid — Inoperative 7-50
  Hydraulic System Switch 9-350
  Input Cyclic Control Bellcrank Assembly 11-262
  Input Pinion Magnetic Seal (AVIM) 6-61
  Instrument Panel Glareshield 8-33
  Integrally Lit Panel Connector on Digital Fuel Control Panel 9-333
  Integrally Lit Panel on Pilot Collective Stick 9-376
  Jackshaft Support Assembly 11-115
  Jackshaft Support Assembly Bearing 11-117
  Junction Block (Typical) 9-404
  Keylock Switch 9-414
  Lateral Force Gradient 11-199
  Left Access Panel 2-175
  Lighting Control Knob on Overhead Console (Typical) 9-962
  Link Assembly Bushings (AVIM) 11-374
  Lower Chip Detector 6-72
  Lower Window 2-124
  Lower Wire Cutter 2-71
  Main Rotor Blade 5-18
  Main Rotor Blade Trim Tab (AVIM) 5-127
  Main Rotor Blades — Off Helicopter 5-16
  Main Rotor Drive Ring Set (AVIM) 5-89
  Main Rotor Droop Stop Plugs 5-29
  Main Rotor Droop Stop Studs 5-37
  Main Rotor Expandable Bolt 5-21
  Main Rotor Expandable Bolt, on Lanyard 5-24
  Main Rotor Hub Damper (AVIM) 5-47
  Main Rotor Hub Damper Shims (AVIM) 5-55
  Main Rotor Hub Shear Bushings (AVIM) 5-61
  Main Rotor Inboard Erosion Strip (AVIM) 5-136
  Main Rotor Pitch Horn Assembly 5-67
  Main Rotor Pitch Horn Bushings (AVIM) 5-72

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
  Main Rotor Pitch Link Horn Attaching Hardware 5-45
  Main Rotor Yoke Adapter Mount Bushings (AVIM) 5-82
  Main Rotor Yoke Buffers (AVIM) 5-96
  Main Rotor Yoke Bumpers (AVIM) 5-99
  Mixing Lever Supports 11-49
  Multiparameter Display (MPD) 8-10
  Multiparameter Display BRT Control Knob 8-8
  Multiparameter Display Fuse(s) (Typical) 8-9
  NG Engine Control Cable 4-104
  NG Engine Control Cable Aft Support Bracket 4-121
  Oil Cooler Bypass Valve 4-82
  Oil Cooler Duct 6-368
  Oil Cooler Fairing Seals 4-94
  Oil Drain Valve 6-353
  Oil Filter Bypass Valve Assembly 6-337
  Oil Filter Inlet Hose 6-345
  Oil Filter Manifold 6-326
  Oil Level Switch 4-73
  Oil Pressure Regulator Valve 6-332
  Oil Pressure Switch 6-346
  Oil Pressure Transducer 6-349
  Oil Pressure Transmitter 4-29
  Oil Tank Assembly 4-69
  Oil Tank Cap and Adapter Assembly 4-81
  Oil Tank Drain Valve 4-80
  Oil Tank Sight Glass 4-76
  Oil Tank Temperature Transducer 4-78
  Overload Sensing Control 9-227
  Particle Separator 4-59
  Pilot Collective Elbow Assembly 11-121
  Pilot Collective Elbow Assembly Bearings 11-122
  Pilot Collective Stick Assembly 11-89
  Pilot Collective Stick Assembly Miscellaneous Parts 11-93
  Pilot Collective Stick Cover 11-44
  Pilot Cyclic Fitting Assembly Bearings (AVIM) 11-330
  Pilot Cyclic Pivot Assembly 11-280
  Pilot Cyclic Pivot Support Assembly 11-332
  Pilot Cyclic Pivot Support Assembly Inserts 11-333

SUBJECT PAGE

R (Cont)

Remove/Install (Cont)
  Pilot Cyclic Position Adjustment Indicator Pin 11-310
  Pilot Cyclic Position Adjustment Knob Assembly 11-306
  Pilot Cyclic Position Adjustment Rod End 11-300
  Pilot Cyclic Stick Assembly 11-314
  Pilot Cyclic Stick Fitting Assembly 11-319
  Pilot Cyclic Stick Pivot Bearing 11-298
  Pitch Rate Sensor 9-421
  Pitot Tube 8-84
  Pivot Assembly Bearing (AVIM) 11-294
  Pressure Manifold 7-41
  Pressure Switch 7-35
  Pushbutton Switch on Digital Fuel Control Panel (Typical) 9-335
  Pylon Fitting Assembly 6-77
  Quick-Disconnect Self-Sealing Coupling Half (Typical) 7-32
  Relay (Typical) 9-381
  Relief Valve 7-44
  Remote Sensor 13-12
  Resistor or Capacitor on Terminal Junction (Typical) 9-433
  Return Manifold 7-38
  Rigid Tube Assembly (Typical) 7-23
  Roll Rate Sensor 9-425
  Rotor Tiedowns 1-91
  SCAS Force Trim Switch 9-347
  SCAS Pitch and Roll Engage Switch 9-342
  SCAS Power Switch 9-348
  SCAS Test Switch 9-346
  SCAS Yaw Engage Switch 9-344
  Seal on Forward Fairing Assembly 2-56
  Seat Restraint 2-37
  Servo Trunnion Bearing 7-93
  Shaft and Bearing Hanger Assembly 6-233
  Sight Gage 6-75
  Skid Shoes and Skid Tube Rivnut 3-16
  Skid Tube Assembly 3-14
  Snap Vent in Access Door Window 2-11
  Socket (Typical) 9-387
  Solenoid 13-11
  Solenoid Valve, Hydraulic 7-47
  Standby Altimeter 8-43
  Standby Attitude Indicator 8-48
  Standby Compass 8-94
  Starter-Generator 9-216

SUBJECT PAGE

R (Cont)

- Remove/Install (Cont)
  - Sump Valve 10-50
  - Switch in Cyclic Grip (Typical) 9-408
  - Switch in Forward Overhead Console (Typical) 9-317
  - Switch in Pilot Collective Stick (Typical) 9-377
  - Tailboom Bearing Hanger Support 2-229
  - Tail Light Support 2-277
  - Tail Rotor Bellcrank 11-481
  - Tail Rotor Bellcrank Bearing (AVIM) 11-483
  - Tail Rotor Driveshaft Cover 2-231
  - Tail Rotor Gearbox 6-291
  - Tail Rotor Gearbox Boot 5-444
  - Tail Rotor Gearbox Housing Packing 5-455
  - Tail Rotor Gearbox Input Seal (AVIM) 6-301
  - Tail Rotor Gearbox Oil Temperature Thermoswitch 6-300
  - Tail Rotor Gearbox Output Shaft Seal (AVIM) 6-309
  - Tail Rotor Gearbox Trunnion Seal and Bearing 5-449
  - Tail Rotor Pitch Change Idler Bushings and Bearing (AVIM) 5-432
  - Tail Rotor Pitch Change Lever Bushings and Bearing (AVIM) 5-424
  - Tail Skid Assembly 2-256
  - TAMS Linear Variable Differential Transformer (LVDT) 9-470
  - Tee, Retainer, Packing and Nut 7-30
  - Temperature Control Valve (Engine Oil System) 6-357
  - Temperature Transducer 6-70
  - Terminal Board (Typical) 9-398
  - Terminal Junction Mount (Typical) 9-400
  - TGT/TRQ Indicator 8-18
  - Thermostat 6-68
  - Throttle Arm Rod End 4-126
  - Toggle Switch on Digital Fuel Control Panel 9-336
  - Torque Transducer 6-116
  - Torquemeter Support Bearing (AVIM) 6-96
  - Torquemeter Support Bearing Seal 6-94
  - Torquemeter Temperature Bulb 6-114
  - Tow Fittings 3-46
  - Transducer Bellcrank Bearing (AVIM) 11-421
  - Transducer Ballcrank Support Bushing (AVIM) 11-423

SUBJECT PAGE

R (Cont)

- Remove/Install (Cont)
  - Transformer in Forward Overhead Console (Typical) 9-319
  - Transformer-Rectifier Unit (TRU) 9-183
  - Transmission Oil Filters 6-321
  - Transmission Oil Jets (Number One and Two) 6-341
  - Transmission Oil Pump 6-317
  - Trunnion Bearing Assembly 11-51
  - Upper Chip Detector 6-66
  - Upper Wire Cutter 2-75
  - Vent Control Cable 13-36
  - Vertical Fin Bumper and Pin 2-258
  - Voltage Regulator 9-231
  - Weight-On-Gear Switch 9-445
  - Windshield Assembly 2-115
- Remove, Clean, Inspect, and Install Hydraulic Filter Assembly 7-15
- Remove, Inspect, and Install Maintenance Step 2-129
- Remove/Install, and Clean, Inspect Lower Transmission Boot Assembly 6-38
- Remove/Install, and Clean, Inspect Outside Air Thermometer 8-101
- Repair Adjustable Tube Assembly 11-163
- Repair Boosted Bellcrank Assembly (AVIM) 11-274
- Repair, Clean, and Inspect
  - AC External Power Control Unit 9-261
  - AC External Power Door Switch 9-234
  - AC External Power Receptacle 9-238
  - AC External Power Reset Switch 9-243
  - AC Generator 9-246
  - Access Door 2-4
  - Access Door Chafing Strip 2-22
  - Access Door Latch Assembly 2-13
  - Actuator Support Assembly (AVIM) 11-168
  - Adjustable Tube Assembly 11-258
  - Aft Crosstube 3-35
  - Aft Crosstube Components 3-41
  - Aft Crosstube Support Assembly 3-8
  - Aft Crosstube Support Beam and Components 3-45
  - Aft Fairing Assembly 2-68
  - Aft Shaft Assembly 6-226
  - Aft Transverse Beam 2-314
  - Air Data Transducer 8-95
  - Air Induction Cowl 4-50
  - Air Induction Cowl Access Door 4-56
  - Alternator Control Unit 9-253
  - Armament Hard Points 2-178

SUBJECT PAGE

R (Cont)

Repair, Clean, and Inspect (Cont)
- Armor Seat Panels 2-51
- Autotransformer 28V 9-257
- Avionic Cooling System Components 9-476
- Avionics Support 2-173
- Back Cushion 2-46
- Batteries 9-185
- Battery Preheat Indicator Lights 9-192
- Beam Assemblies 2-305
- Bearing Hanger, Bearing, Impeller, Fan Shaft and Blower Housing 6-257
- Boost Pump 10-41
- Boosted Bellcrank Assembly 11-272
- Bushing 7-99
- Cabin Roof Drain 2-176
- Cabin Roof Skylight 2-123
- Center Post Duct and Doors 2-114
- Chafing Strip for Access Door 2-22
- Charger-Monitor 9-195
- Circuit Breakers (Typical) 9-303
- Clevis Adapter 7-102
- Clock 8-98
- Collective Boosted Bellcrank Assembly (AVIM) 11-153
- Collective Control Input Valve Bellcrank Assembly 11-175
- Collective Control Link Assembly 11-142
- Collective Controls 11-36
- Collective Friction Clamp 11-87
- Collective Jackshaft 11-75
- Collective Jackshaft Spacer 11-81
- Collective Pitch Link Assembly 11-47
- Components of Antibacklash Adapter Assembly 6-124
- Components of Freewheeling Unit (AVIM) 6-179
- Components of Shaft and Bearing Hanger Assembly 6-238
- Components of the Main Rotor Mast Assembly (AVIM) 6-143
- Components of Torquemeter Support and Bearing Assembly (AVIM) 6-102
- Copilot Collective Grip Assembly 11-64
- Copilot Collective Stick Elbow Assembly 11-129
- Copilot Collective Stick Inner Tube Assembly 11-67
- Copilot Collective Stick Outer Tube Assembly 11-69
- Copilot Collective Stick Throttle Arm 11-127

SUBJECT PAGE

R (Cont)

Repair, Clean, and Inspect (Cont)
- Cover and Chain (TAMS Signal Conditioning Unit) 9-467
- CPO Cyclic Stick Fitting Assembly 11-348
- CPO Cyclic Stick Gimble Assembly 11-345
- CPO Cyclic Stick Housing Assembly 11-380
- CPO Cyclic Stick Link Assembly 11-372
- CPO Cyclic Stick Quick-Disconnect Lever Assembly 11-368
- CPO Cyclic Stick Plate Assembly 11-358
- CPO Cyclic Stick Socket Housing Assembly 11-384
- CPO Cyclic Stick Stud 11-364
- CPO Cyclic Stick Support Assembly 11-354
- CPO Cyclic Stick Tube Assembly 11-390
- Crew Door Jettison Mechanism 2-31
- Cyclic, Collective and Directional Control Servoactuators (Typical) 7-91
- Cyclic Friction Knob and Shaft 11-238
- Cyclic Mixer Bellcrank Assembly and Rod End Bearing 11-250
- Cyclic Mixer Bellcrank Assembly (AVIM) 11-252
- Cyclic Mixer Bellcrank Assembly Clevis 11-247
- Cyclic Stick Pivot Bearing Retainer 11-284
- Cyclic Torque Tube 11-215
- Cyclic Transducer Spacer 11-290
- Cyclic Yoke 11-228
- Data Bus Coupler or Terminator 9-427
- DC External Power Connector 9-220
- DC External Power Door Switch 9-210
- Defuel Valve 10-48
- Directional Control Force Gradient 11-456
- Directional Control Pedals 11-399
- Directional Control Rotary Actuator 11-469
- Droop Compensator Potentiometer Arm 11-146
- Dual Tachometer (AVIM) 8-53
- Engine Cowl Assembly 2-60
- Engine Cowl Assembly Side Panel 2-64
- Engine Electronic Control 9-454
- Engine Mount Trunnion 4-144
- Engine to Transmission Driveshaft 6-26
- Eyebolt 3-21
- Fan Shaft Bearing Hanger Brackets (Forward and Aft) 6-268
- Fin Assembly 2-240
- Flight Control Bellcranks, Idlers, and Walking Beams 11-496

SUBJECT PAGE

R (Cont)

Repair, Clean, and Inspect (Cont)
- Flight Control Supports 11-510
- Flight Control Tubes 11-487
- Force Gradient Tube Assembly 11-206
- Fore-and-Aft Force Gradient 11-189
- Fore-and-Aft Magnetic Brake 11-198
- Forward Crosstube 3-24
- Forward Crosstube Components 3-32
- Forward Crosstube Strap 3-6
- Forward Fairing Assembly 2-53
- Forward Firewall 4-184
- Forward Shaft Assembly 6-221
- Forward Transverse Beam 2-312
- Fuel Cell (AVIM) 10-64
- Fuel Cell Support Assemblies 10-65
- Fuel Shutoff Lever 10-5
- Fuel Shutoff Valve (AVIM) 10-15
- Fuel Sump 10-36
- Fuel System Hoses 10-26
- Heater Control Cable 13-17
- Heating and Ventilation System Ducts 13-18
- Hinge Halves, Quick Disconnect Pin and Lanyard for Access Doors 2-19
- Honeycomb Panels 2-131
- Horizontal Stabilizer 2-269
- Hydraulic Hoses 7-29
- Hydraulic Pressure Switch 7-37
- Hydraulic Pump 7-78
- Hydraulic Reservoir 7-71
- Hydraulic Solenoid Valve 7-51
- Hydraulic System Tubing 7-25
- Input Cyclic Control Bellcrank Assembly 11-264
- Instrument Panel Glareshield 8-35
- Integrally Lit Panel (Typical) 9-305
- Jackshaft Support Assembly and Bearing 11-118
- Jettison Mechanism, Crew Door 2-31
- Latch Assembly for Access Door 2-13
- Latch Assembly for Crew Door 2-32
- Lateral Force Gradient 11-201
- Lateral Magnetic Brake 11-209
- Lights (Typical) 9-266
- Lower Window 2-127
- Lower Wire Cutter 2-73
- Main Rotor Blade Bolt 5-27
- Main Rotor Controls Antidrive Lever (AVIM) 5-229
- Main Rotor Controls Antidrive Link (AVIM) 5-236

SUBJECT PAGE

R (Cont)

Repair, Clean, and Inspect (Cont)
- Main Rotor Controls Collective Lever (AVIM) 5-209
- Main Rotor Controls Collective Link (AVIM) 5-219
- Main Rotor Controls Drive Hub Set (AVIM) 5-185
- Main Rotor Controls Drive Lever (AVIM) 5-177
- Main Rotor Controls Drive Link (AVIM) 5-169
- Main Rotor Controls Gimbal Ring (AVIM) 5-195
- Main Rotor Controls Spacer 5-225
- Main Rotor Drive Ring Set (AVIM) 5-91
- Main Rotor Droop Stop Plugs 5-34
- Main Rotor Droop Stop Studs 5-42
- Main Rotor Expandable Bolt 5-25
- Main Rotor Grip Assembly 5-84
- Main Rotor Grip Lead Lag Bearings (AVIM) 5-76
- Main Rotor Hub Damper (AVIM) 5-52
- Main Rotor Hub Lower Cone 5-14
- Main Rotor Hub Lower Plate 5-94
- Main Rotor Hub Shear Bearings (AVIM) 5-63
- Main Rotor Hub Upper Plate 5-58
- Main Rotor Hub Yoke 5-101
- Main Rotor Pitch Horn Assembly (AVIM) 5-69
- Main Rotor Pitch Link 5-162
- Main Rotor Swashplate and Support 5-242
- Main Rotor Swashplate and Support Components (AVIM) 5-257
- Main Rotor Upper Cone Plate Assembly 5-11
- Main Rotor Yoke Adapter Assembly 5-79
- Maintenance Step (Left Side) 2-130
- Miscellaneous Electrical Equipment 9-300
- Mixing Valve (AVIM) 13-5
- Mount Bolt 2-308
- Multiparameter Display (MPD) (AVIM) 8-12
- Night Vision Power Supply 9-292
- Oil Cooler, Bypass Valve 4-85
- Oil Cooler, Duct 6-369
- Oil Drain Valve 6-355
- Oil Filter Bypass Valve Assembly 6-339
- Oil Filter Manifold 6-330
- Oil Pressure Regulator Valve 6-335
- Oil Pressure Switch 6-348
- Oil Pressure Transducer 6-351
- Oil Tank Assembly 4-71

SUBJECT PAGE

R (Cont)

Repair, Clean, and Inspect (Cont)
  - Oil Tank Support and Oil Cooler Support Duct 4-88
  - Overload Sensing Control 9-225
  - Particle Separator 4-60
  - Pedal Adjustment and Support Assemblies 11-398
  - Pilot Collective Stick Control Panel Box 11-97
  - Pilot Collective Stick Detent Button 11-101
  - Pilot Collective Stick Elbow Assembly 11-107
  - Pilot Collective Stick Inner Tube Assembly 11-109
  - Pilot Collective Stick Outer Tube Assembly 11-105
  - Pilot Collective Stick Ring Gears 11-111
  - Pilot Collective Stick Throttle Arm 11-113
  - Pilot Collective Stick Throttle Friction Plug 11-99
  - Pilot Collective Stick Throttle Grip Assembly 11-103
  - Pilot Cyclic Pivot Assembly 11-286
  - Pilot Cyclic Position Adjustment Indicator Pin 11-312
  - Pilot Cyclic Position Adjustment Rod End 11-304
  - Pilot Cyclic Stick Fitting Assembly 11-328
  - Pilot Cyclic Stick Indicator Pin Retainer 11-288
  - Pilot Cyclic Stick Pivot Bearing 11-299
  - Pilot Cyclic Stick Stop 11-292
  - Pilot Cyclic Tube Assembly 11-325
  - Pitch Rate Sensor 9-419
  - Pitot-Static Tubing and Fittings 8-63
  - Pitot Tube 8-86
  - Pivot Support Assembly 11-283
  - Plenum Assembly 13-32
  - Quick-Disconnect Coupling Halves 4-93
  - Remote Sensor 13-13
  - Roll Rate Sensor 9-423
  - Seat Restraint 2-42
  - Signal Conditioning Unit and Chain (TAMS) 9-463
  - Signal Conditioning Unit (Mast Torque) 9-459
  - Skid Shoes and Skid Tube Rivnut 3-18
  - Skid Tube Assembly 3-12
  - Spacer 5-316
  - Spring Assembly 2-310
  - Standby Airspeed Indicator 8-51
  - Standby Altimeter 8-41

SUBJECT PAGE

R (Cont)

  - Standby Attitude Indicator 8-46
  - Standby Compass 8-92
  - Starter Generator 9-214
  - Stop-Down Assembly 2-302
  - Stop Nut 2-300
  - Sump Valve 10-52
  - Tailboom 2-187
  - Tailboom/Aft Fuselage Attach Fittings 2-203
  - Tailboom Attach Bolts 2-211
  - Tailboom Bearing Hanger Supports 2-224
  - Tail Light Support 2-275
  - Tail Rotor Assembly 5-357
  - Tail Rotor Blades 5-391
  - Tail Rotor Control Tube Driver Plate 5-346
  - Tail Rotor Counterweight Bracket 5-377
  - Tail Rotor Counterweight Support 5-368
  - Tail Rotor Crosshead 5-351
  - Tail Rotor Driveshaft Cover 2-234
  - Tail Rotor Gearbox 6-296
  - Tail Rotor Gearbox Pitch Change Housing 5-465
  - Tail Rotor Gearbox Support Assembly 2-214
  - Tail Rotor Pitch Change Control Tube 5-438
  - Tail Rotor Pitch Change Idler 5-430
  - Tail Rotor Pitch Change Lever (AVIM) 5-421
  - Tail Rotor Pitch Change Rod Assembly 5-414
  - Tail Rotor Pitch Change Trunnion 5-463
  - Tail Rotor Pitch Change Trunnion Cap 5-461
  - Tail Rotor, Pitch Horn 5-375
  - Tail Rotor Pitch Link 5-341
  - Tail Rotor Retaining Nut 5-371
  - TAMS Linear Variable Differential Transformer (LVDT) 9-468
  - Temperature Control Valve (Engine Oil System) 6-359
  - TGT/TRQ Indicator (AVIM) 8-22
  - Tow Fittings 3-49
  - Transducer 11-59
  - Transformer-Rectifier Unit (TRU) 9-181
  - Transmission 6-29
  - Transmission Oil Jets (Number One and Two) 6-344
  - Transmission Oil Pump 6-320
  - Trunnion Bearing 7-95
  - Trunnion Bearing Assembly 11-54
  - Upper Wire Cutter 2-86
  - Vent Control Cable 13-38
  - Voltage Regulator 9-229
  - Windshield Assembly 2-119

SUBJECT PAGE

R (Cont)

- Repair, Clean, Inspect, and Build Up Oil Cooler 6-363
- Repair Collective Transducer Wiring/Connection (Typical) 11-61
- Repair Fin Skin Voids 2-260
- Repair Input Cyclic Control Bellcrank Assembly (AVIM) 11-266
- Repair Main Rotor Blade Skin By Patching (AVIM) 5-115
- Repair Minor Puncture Damage and Rebonding of Sleeve to Fin Assembly 2-252
- Repair Tail Rotor Gearbox Breather 6-299
- Repair Tail Rotor Hub (AVIM) 5-386
- Repair Touch Up Fin 2-265
- Replace Electrical Connector (Typical) of Standpipe Electrical Assembly 6-90
- Replace Filter Elements 7-19
- Replace Forward Oil Seal Forward Seal Cap 6-174
- Replace Fuel Cell Support Assemblies 10-65
- Reporting Equipment Improvement Recommendations (EIR) 1-3
- Requirements E-1
- Requirements, Tools and Test Equipment B-25
- Reservoir Assembly, Hydraulic
  - Remove/Install 7-58
- Reservoir, Hydraulic
  - Clean, Inspect, and Repair 7-71
- Reset Switch, AC External Power
  - Clean, Inspect, and Repair 9-243
  - Remove/Install 9-244
- Resistor or Capacitor on Terminal Junction (Typical), Remove/Install 9-433
- Resistor, Position Light Dimming
  - Install 9-283
  - Remove 9-282
- Responsibility, Weight and Balance G-1
- Retainer, Tee, Packing and Nut
  - Remove/Install 7-30
- Return Manifold, Remove/Install 7-38
- Return Port Union, Hydraulic Reservoir
  - Remove/Install 7-65
- RFD Test Pattern Absent in DISPLAY CHECK 9-977
- Rig Collective Pitch System 11-3
- Rig Cyclic Controls 11-15
- Rig Directional Controls 11-24
- Rig NG Engine Control Cable 4-100

SUBJECT PAGE

R (Cont)

- Repair, Clean, and Inspect (Cont)
- Rigging 11-2
- Right Cyclic Yoke
  - Install 11-226
  - Remove 11-225
- Right Defog Blower Does Not Operate K-211
- Right Defog Blower Does Not Operate (During BATTERY No. 1) K-111
- Right Multifunction Display (MFD) is Not Lit After INST LT Control is Turned From OFF to BRT K-503
- Rigid Tube Assembly (Typical) 7-27
- Rivnut, Skid Shoes and Skid Tube,
  - Remove/Install 3-16
- Rod End Assemblies, Cap and Spring,
  - Remove/Install 2-316
- Roll Rate Sensor
  - Clean, Inspect, and Repair 9-423
  - Remove/Install 9-425
- Roll Rate Sensor Failure CODE 22 is Displayed on MFD K-213
- Roof Drain, Cabin
  - Clean, Inspect, and Repair 2-176
- Rotating Controls, Main Rotor 5-158
- Rotor Blade, Bolt, Main
  - Clean, Inspect, and Repair 5-27
- Rotor Blades, Main 5-18
  - Fold/Unfold 1-74
- Rotor Driveshaft Cover, Tail
  - Clean, Inspect, and Repair 2-234
  - Remove/Install 2-231
- Rotor Gearbox, Tail,
  - Check Serviceability of 6-13
- Rotor Hub and Blade Assembly, Main, 5-1
  - Remove 5-4
- Rotor NR RPM Indicator (Vertical Scale) Does Not Indicate Approximately 64% (Helicopter at Flight Idle and DC Generator ON) K-412
- Rotor, Tail, Balancing 5-471
- Rotor Tiedowns, Remove/Install 1-91
- Rotor System E-11
  - Short Term Storage E-11
- Rotors 1-15
- RPM Main Rotor Autorotation Adjust 5-333
- RPM Switch Does Not Increase and/or Decrease Engine RPM K-459
- Rubber Particles Found During Inspection of Oil Filter K-7

SUBJECT PAGE

S

Safety, Care, and Handling . . . 1-8
  Avionics . . . 1-9
  Laser . . . 1-8
SCAS and Hydraulic Electrical System — Operational Check . . . 9-171
SCAS Bit . . . J-12
SCAS Control Panel
  Install . . . 9-339
  Remove . . . 9-338
SCAS Force Trim Switch
  Remove/Install . . . 9-347
SCAS Pitch and Roll Engage Switch
  Remove/Install . . . 9-342
SCAS Power Switch
  Remove/Install . . . 9-348
SCAS Test Switch
  Remove/Install . . . 9-346
SCAS Yaw Engage Switch
  Remove/Install . . . 9-344
Screen, Hydraulic Reservoir
  Remove/Install . . . 7-70
Seal (AVIM), Input Pinion Magnetic
  Remove/Install . . . 6-61
Seal (AVIM), Input, Tail Rotor Gearbox
  Remove/Install . . . 6-301
Seal (AVIM), Output Shaft, Tail Rotor Gearbox
  Remove/Install . . . 6-309
Seal, Bearing, Torquemeter Support
  Remove/Install . . . 6-94
Seal Cap, Forward, Forward Oil Seal
  Replace . . . 6-174
Seal on Forward Fairing Assembly
  Remove/Install . . . 2-56
Searchlight, Corrosion Treatment . . . 9-287
Searchlight Does not Come on at Approximately 60 Degrees Extension (Searchlight Power Switch is ON Searchlight Position Switch Held in EXT) . . . K-548
Searchlight Does Not Come on (Searchlight Power Switch is ON) . . . K-452
Searchlight Does Not Extend to 120 Degrees . . . K-535
Searchlight Does Not Go Off at Approximately 90 Degrees Left From Forward (Searchlight Power Switch is ON Searchlight Position Switch Held in L) . . . K-547

SUBJECT PAGE

S (Cont)

Searchlight Does Not Go Off at Approximately 90 Degrees Right From Forward (Searchlight Power Switch is ON Searchlight Position Switch Held in R) . . . K-546
Searchlight Does Not Stow Properly (Searchlight Position Switch Held in RET) . . . 549
Searchlight Electrical Connections
  Clean/Tighten . . . 9-286
Searchlight
  Install . . . 9-288
  Operational Check . . . 9-167
  Remove . . . 9-284
Searchlight Will Not Extend (Searchlight Position Switch Held in EXT Position) . . . K-533
Searchlight Will Not Retract (Searchlight Position Switch Held in RET Position) . . . K-536
Searchlight Will Not Turn Left (Searchlight Position Switch Held in L Position) . . . K-540
Searchlight Will Not Turn Right (Searchlight Position Switch Held in R Position) . . . K-538
Seat Restraint
  Clean, Inspect, and Repair . . . 2-42
  Remove/Install . . . 2-37
Security . . . C-1
Select Switch, CPO Channel
  Remove/Install . . . 9-437
Sensing Control, Overload
  Clean, Inspect, and Repair . . . 9-225
  Remove/Install . . . 9-227
Sensor, Pitch Rate
  Clean, Inspect, and Repair . . . 9-419
  Remove/Install . . . 9-421
Sensor, Remote
  Clean, Inspect, and Repair . . . 13-13
  Remove/Install . . . 13-12
Sensor, Roll Rate
  Clean, Inspect, and Repair . . . 9-423
  Remove/Install . . . 9-425
Service Door, Engine Oil on AFt Fairing Assembly
  Remove/Install . . . 2-70
Service/Drain
  Engine Oil System . . . 1-49
  Hydraulic System . . . 1-58
  Tail Rotor Gearbox . . . 1-57
  Transmission Oil and Filter . . . 1-53

SUBJECT PAGE

S (Cont)

Serviceability Check of
  Freewheeling Unit 6-8
  Main Transmission 6-3
  Tail Rotor Gearbox 6-13
Serviceability, Standards of 1-133
Servicing 1-39
Servo Trunnion Bearing
  Remove/Install 7-93
Servoactuator Chatters When Controls are Moved K-20
Servoactuator, Directional Control
  Remove/Install 7-88
Servoactuators (Typical), Cyclic, Collective and Directional Control
  Clean, Inspect, and Repair 7-91
Shaft and Bearing Hangar Assembly
  Remove/Install 6-233
Shaft and Bearing Hanger Assembly Components of
  Clean, Inspect, and Repair 6-238
Shaft Assembly, Aft
  Clean, Inspect, and Repair 6-226
  Remove/Install 6-223
Shaft Assembly, Forward
  Clean, Inspect, and Repair 6-221
  Remove/Install 6-219
Short Term Storage E-7
  Airframe E-12
  Avionics Equipment E-12
  Battery E-13
  Depreservation After E-13
  Description E-7
  Engine E-9
  Fuel System E-11
  Hydraulic System E-11
  Inspection Prior to Storage E-7
  Instruments E-12
  Landing Gear E-12
  Maintenance of Preservation E-12
  Power Train System E-8
  Rotor System E-11
Shunt (Typical)
  Install 9-394
  Remove 9-391
Shutoff Lever, Fuel
  Clean, Inspect, and Repair 10-5
  Install 10-7
  Remove 10-3
Shutoff Valve, Fuel (AVIM)
  Clean, Inspect, and Repair 10-15

SUBJECT PAGE

S (Cont)

Shutoff Valve, Fuel
  Remove/Install 10-12
Side Panel, Engine Cowl Assembly
  Clean, Inspect, and Repair 2-64
  Remove/Install 2-63
Side Position Light (Typical)
  Install 9-279
  Remove 9-278
Sight Gage, Remove/Install 6-75
Sight Glass, Oil Tank
  Remove/Install 4-76
Sight Plug, Hydraulic Reservoir
  Remove/Install 7-67
Signal Conditioning Unit and Chain (TAMS)
  Clean, Inspect, and Repair 9-463
Signal Conditioning Unit (Mast Torque)
  Clean, Inspect, and Repair 9-459
  Install 9-462
  Remove 9-461
Signal Conditioning Unit (TAMS)
  Install 9-466
  Remove 9-465
Skid Assembly, Tail
  Remove/Install 2-256
Skid Shoes and Skid Tube Rivnut
  Clean, Inspect, and Repair 3-18
  Remove/Install 3-16
Skid Tube Assembly
  Clean, Inspect, and Repair 3-12
  Remove/Install 3-14
Skid Tube Rivnut and Skid Shoes
  Clean, Inspect, and Repair 3-18
  Remove/Install 3-16
Skin Voids, Fin, Repair 2-260
Skylight, Cabin Roof
  Clean, Inspect, and Repair 2-123
  Remove/Install 2-121
Sleeve (AVIM), Wear Freewheeling Unit Tail Rotor Drive Output Adapter
  Remove/Install 6-210
Sling Load Helicopter 1-100
Snap Vent in Access Door Window
  Remove/Install 2-11
Snap Vent in Crew Door Window
  Remove/Install 2-25
Socket (Typical)
  Remove/Install K-387
Solenoid, Remove/Install 13-11
Spacer, Clean, Inspect, and Repair 5-373
Special Inspection 1-133

SUBJECT PAGE

S (Cont)

- Spray Coating, Flame, Use of (AVIM) 2-110
- Spring Assembly
  - Clean, Inspect, and Repair 2-310
- Spring, Cap and Rod End Assemblies
  - Remove/Install 2-316
- Stability and Control Augmentation System (SCAS) Control Panel Not Lit After CONSOL LT Control is Turned From OFF to BRT K-520
- Stabilizer, Horizontal
  - Clean, Inspect, and Repair 2-269
  - Remove/Install 2-273
- Standards of Serviceability 1-133
- Standby Airspeed Indicator
  - Clean, Inspect, and Repair 8-51
  - Install 8-54
  - Operational Check 8-49
  - Remove 8-53
- Standby Altimeter
  - Clean, Inspect, and Repair 8-41
  - Operational Check 8-38
  - Remove/Install 8-43
- Standby Altimeter Not Lit After INST LT Control is Turned From OFF to BRT K-491
- Standby Attitude Indicator
  - Clean, Inspect, and Repair 8-41
  - Operational Check 8-40
  - Remove/Install 8-48
- Standby Attitude Indicator Not Lit After INST LT Control is Turned From OFF to BRT K-487
- Standby Compass
  - Clean, Inspect, and Repair 8-92
  - Operational Check 8-89
  - Remove/Install 8-94
- Standby Compass Is Not Lit After INST LT Control Is Turned From OFF TO BRT K-491
- Standpipe Electrical Assembly, Electrical Connector (Typical) of, Replace 6-86
- Standpipe Electrical Assembly
  - Install 6-90
  - Remove 6-81
- Start Counter Does Not Increase Count (START SWITCH ON, IGN AND START Circuit Breakers Closed) K-391

SUBJECT PAGE

S (Cont)

- Starter-Generator
  - Clean, Inspect, and Repair 9-214
  - Remove/Install 9-216
- Starter-Generator and Control — Operational Check 9-107
- Starter-Generator Percent Load Does Not Appear on MPD K-268
- Starter Voltage Indication Not Preset on MPD During Start K-215
- Starter Will Not Crank Engine K-217
- Static Calibration (TAMS) 9-471
- Step, Maintenance
  - Clean, Inspect, and Repair 2-130
  - Remove/Install 2-129
- Stop-Down Assembly
  - Clean, Inspect, and Repair 2-302
- Stop-Down Assembly and/or Stop Nut, Corner Mount
  - Remove/Install 2-283
- Stop Nut
  - Clean, Inspect, and Repair 2-300
- Stop Nut, Corner Mount and/or Stop-Down Assembly
  - Remove/Install 2-283
- Storage
  - Airframe E-5
  - Categories of E-1
  - Components Involved in Accident E-1
  - Description, Flyable E-4
  - Engine, Short Term E-9
  - Flyable E-4
  - Fuel System, Flyable E-5
  - Fuel System, Intermediate E-19
  - Fuel System, Short Term E-11
  - Helicopter E-1
  - Hydraulic System, Flyable E-5
  - Hydraulic System, Intermediate E-24
  - Hydraulic System, Short Term E-11
  - Inspection of E-2
  - Power Train, Flyable E-4
  - Preservation, Maintenance of, During Flyable E-6
  - Requirements E-1
  - Short Term E-7
- Storage of Helicopter E-1
  - Categories of E-1
  - Flyable E-4
  - Inspection of E-2

SUBJECT PAGE

S (Cont)

Storage of Helicopter (Cont)
  Procedures Common to All Categories E-2
  Requirements E-1
  Short Term E-7
Stored Helicopters, Inspection of E-2
Strainer and Cover Gasket, Hydraulic Reservoir, Replace 7-68
Strap, Crosstube, Forward
  Clean, Inspect, and Repair 3-6
Structural Bonding (AVIM), Use of Adhesive, Heat resistant 2-106
Sump, Fuel
  Clean, Inspect, and Repair 10-36
  Install 10-37
  Remove 10-34
Sump Valve
  Clean, Inspect, and Repair 10-52
  Remove/Install 10-50
Supply Hoses, Engine Vent and Fuel Supply
  Fabricate 10-27
  Remove/Install 10-21
Support Assemblies, Fuel Cell
  Clean, Inspect, Repair and Replace 10-65
Support Assembly, Crosstube, Aft
  Clean, Inspect, and Repair 3-8
Support Assembly, Tail Rotor Gearbox
  Clean, Inspect, and Repair 2-214
Support, Avionics
  Clean, Inspect, and Repair 2-173
Support Beam and Components, Aft Crosstube
  Clean, Inspect, and Repair 3-45
  Remove/Install 3-43
Support Beam Bushings Aft Crosstube (AVIM)
  Remove/Install 3-47
Support, Tailboom Bearing Hanger
  Clean, Inspect, and Repair 2-224
  Remove/Install 2-229
Support, Tail Light
  Clean, Inspect, and Repair 2-275
  Remove/Install 2-277
Switch, AC External Power Door
  Clean, Inspect, and Repair 9-234
  Remove/Install 9-236
Switch, AC External Power Reset
  Clean, Inspect, and Repair 9-243
  Remove/Install 9-244
Switch, Avionic Cooling System Thermo, (Typical)
  Remove/Install 9-488

SUBJECT PAGE

S (Cont)

Switch, CPO Channel Select
  Remove/Install 9-437
Switch, DC External Power Door
  Clean, Inspect, and Repair 9-210
  Remove/Install 9-211
Switch, Fuel Pressure
  Remove/Install 10-30
Switch, Heater Overheat
  Remove/Install 9-379
Switch, Hydraulic Pressure
  Clean, Inspect, and Repair 7-37
Switch in Cyclic Grip (Typical)
  Remove/Install 9-403
Switch in Forward Overhead Console (Typical)
  Remove/Install 9-317
Switch in Pilot Collective Stick (Typical), Pushbutton, Remove/Install 9-377
Switch, Keylock, Remove/Install 9-414
Switch on Digital Fuel Control Panel (Typical), Pushbutton
  Remove/Install 9-335
Switch on Digital Fuel Control Panel Toggle
  Remove/Install 9-346
Switch, SCAS Force Trim
  Remove/Install 9-347
Switch, SCAS Pitch and Roll Engage
  Remove/Install 9-342
Switch, SCAS Power
  Remove/Install 9-348
Switch, SCAS Test
  Remove/Install 9-346
Switch, SCAS Yaw Engage
  Remove/Install 9-344
Switch, Weight-On-Gear
  Remove/Install 9-448
Symbols, Wiring Diagram F-2
Symptom (MAPS), List of Maintenance Action Precise ...... Appendix K
System Blower, Avionic Cooling
  Install 9-484
  Remove 9-481
System Components, Avionic Cooling
  Clean, Inspect, and Repair 9-476
System, Drive Train 6-1
System Flexible Air Duct Coupling, Avionic Cooling
  Remove/Install 9-490

SUBJECT PAGE

S (Cont)

System Motor Intake Duct Assembly,
 Avionic Cooling
  Remove/Install 9-487
System Thermoswitch (Typical),
 Avionic Cooling
  Remove/Install 9-488
System, Troubleshooting Drive Train 6-1, K1

T

Table F-1, Equipment List (Electrical) F-9
Table of Contents i
Tachometer (AVIM), Dual
  Clean, Inspect, and Repair 8-29
  Disassemble/Assemble 8-27
Tachometer, Dual, Remove/Install 8-26
Tailboom
  Clean, Inspect, and Repair 2-187
  Install 2-220
  Remove 2-198
Tailboom/Aft Fuselage Attach Fittings
  Clean, Inspect and Repair 2-203
Tailboom Attach Bolts
  Clean and Inspect 2-209
  Remove/Install 2-211
Tailboom Bearing Hanger Supports,
  Clean, Inspect, and Repair 2-224
  Remove/Install 2-229
Tailboom Fairleads
  Inspect, Remove and Install 2-218
Tail Light Supports
  Clean, Inspect, and Repair 2-275
  Remove/Install 2-277
Tail Position Light
  Install 9-281
  Remove 9-280
Tail Rotor
  Balancing 5-472
  Inspect 5-338
Tail Rotor Assembly
  Assemble 5-340
  Balance 5-362
  Clean, Inspect, and Repair 5-357
  Disassemble 5-359
  Install 5-366
  Remove 5-355

SUBJECT PAGE

T (Cont)

Tail Rotor Bellcrank, Remove/Install 11-481
Tail Rotor Bellcrank Bearing (AVIM)
  Remove/Install 11-483
Tail Rotor Blades (AVIM)
  Clean, Inspect, Repair, and Refinish 5-391
Tail Rotor Control Tube Drive Plate
  Clean, Inspect, and Repair 5-346
  Install 5-348
  Remove 5-345
Tail Rotor Counterweight Bracket
  Clean, Inspect, and Repair 5-377
Tail Rotor Counterweight Support
  Clean, Inspect, and Repair 5-368
Tail Rotor Crosshead
  Clean, Inspect, and Repair 5-351
  Install 5-353
  Remove 5-350
Tail Rotor Drive Output Adapter Wear
 Sleeve (AVIM), Freewheeling Unit
  Remove/Install 6-210
Tail Rotor Drive Output Oil Seal (AVIM),
 Freewheeling Unit
  Remove/Install 6-206
Tail Rotor Driveshaft 6-219
Tail Rotor Driveshaft and Bearing Hanger
 Alignment and Coupling, Inspection 6-274
Tail Rotor Driveshaft Covers
  Clean, Inspect, and Repair 2-234
  Remove/Install 2-231
Tail Rotor Driveshaft, Vibration in K-12
Tail Rotor Gearbox 6-290
  Clean, Inspect, and Repair 6-296
  Drain/Service 1-57
  Remove/Install 6-291
  Serviceability Check of 6-13
Tail Rotor Gearbox Boot, Remove/Install 5-444
Tail Rotor Gearbox Breather, Repair 6-299
Tail Rotor Gearbox Chip Detector Fuzz
 Burner Failure-Special Test Tool LED
 Does Not Flash When Test Switch is
 Set to ON K-298
Tail Rotor Gearbox Housing Packing,
  Remove/Install 5-455
Tail Rotor Gearbox Input Seal (AVIM),
  Remove/Install 6-301
Tail Rotor Gearbox Oil Temperature
 Thermoswitch, Remove/Install 6-300
Tail Rotor Gearbox Output Shaft Seal 6-309
Tail Rotor Gearbox Pitch Change Housing
  Clean, Inspect and Repair 5-462

SUBJECT PAGE

T (Cont)

- Tail Rotor Gearboax Support Assembly
  - Clean, Inspect, and Repair 2-214
- Tail Rotor Gearbox Trunnion Seal and Bearing
  - Remove/Install 5-449
- Tail Rotor Hub (AVIM)
  - Assemble 5-389
  - Disassemble 5-379
  - Repair 5-386
- Tail Rotor Hub Components (AVIM)
  - Clean and Inspect 5-380
- Tail Rotor Output Shaft Support Bearing (AVIM), Freewheeling Unit
  - Remove/Install 6-208
- Tail Rotor Pitch Change Control Tube
  - Clean, Inspect, and Repair 5-438
  - Install 5-440
  - Remove 5-436
- Tail Rotor Pitch Change Idler
  - Clean, Inspect, and Repair 5-430
  - Install 5-434
  - Remove 5-428
- Tail Rotor Pitch Change Idler Bushings and Bearing (AVIM), Remove/Install 5-432
- Tail Rotor Pitch Change Lever (AVIM)
  - Clean, Inspect, and Repair 5-421
- Tail Rotor Pitch Change Lever
  - Install 5-426
  - Remove 5-419
- Tail Rotor Pitch Change Lever Bushings and Bearings (AVIM)
  - Remove/Install 5-424
- Tail Rotor Pitch Change Mechanism 5-407
  - Inspect 5-409
- Tail Rotor Pitch Change Rod Assembly
  - Clean, Inspect, and Repair 5-414
  - Install 5-417
  - Remove 5-412
- Tail Rotor Pitch Change Trunnion
  - Clean, Inspect, and Repair 5-463
- Tail Rotor Pitch Change Trunnion Cap
  - Clean, Inspect, and Repair 5-461
- Tail Rotor Pitch Horn
  - Clean, Inspect, and Repair 5-375
- Tail Rotor Pitch Link
  - Clean, Inspect, and Repair 5-341
  - Install 5-343
  - Remove 5-340
- Tail Rotor Retaining Nut
  - Clean, Inspect, and Repair 5-371
- Tail Skid Assembly, Remove/Install 2-256

SUBJECT PAGE

T (Cont)

- TAMS Linear Variable Differential Transformer (LVDT)
  - Clean, Inspect, and Repair 9-468
  - Remove/Install 9-470
- TAMS Circuit Breaker Will Not Stay Closed K-293
- TAMS NO GO appears on MFD K-294
- Tee, Retainer, Packing and Nut
  - Remove/Install 7-30
- Temperature Control Valve (Engine Oil System)
  - Clean, Inspect, and Repair 6-359
  - Remove/Install 6-357
- Temperature Transducer, Remove/Install 6-70
- Terminal Board (Typical)
  - Remove/Install 9-398
- Terminal Junction (Typical)
  - Remove/Install 9-400
- Test Equipment, Tools and B-5
- Test Switch, SCAS, Remove/Install 9-346
- TGT/TRQ Indicator, Remove/Install 8-18
- TGT/TRQ Indicator Not Lit After INST LT Control is Turned from OFF to BRT K-499
- TGT/TRQ Indicators Do Not Function Properly with MPD Operating Nomally K-26
- Thermo Switch (Typical), Avionic Cooling System
  - Remove/Install K-488
- Thermometer, Outside Air
  - Clean, Inspect, and Remove/install 8-101
- Thermostat, Remove/Install 6-68
- Thermoswitch, Tail Rotor Gearbox Oil Temperature, Remove/install 6-300
- Throttle Arm Rod End, Remove/Install 4-127
- Tiedowns, Rotor, Install/Remove 1-91
- Toggle Switch on Digital Fuel Control Panel
  - Remove/Install 9-336
- Tone Check Test on MFD Fails
  - (MCPU L Circuit Breaker Open) K-224
  - (MCPU R Circuit Breaker Open) K-227
- Tools and Test Equipment B-5
  - Requirements B-25
- Top Coatings, Aliphatic Polyurethane, Use of 2-102
- Torque Transducer, Remove/Install 6-116
- Torquemeter Support and Bearing Assembly
  - Clean, Inspect, and Repair 6-102
  - install 6-119
  - Remove 6-92

SUBJECT PAGE

T (Cont)

- Torquemeter Support Bearing Seal
  - Remove/Install 6-94
- Torquemeter Support Bearing Seal (AVIM)
  - Remove/Install 6-96
- Torquemeter System Antibacklash Adapter Assembly
  - Install 6-133
  - Remove 6-122
- Torquemeter Temperature Bulb
  - Remove/Install 6-114
- Touch Up Fin, Repair 2-265
- Tow Fittings
  - Clean, Inspect, and Repair 3-49
  - Remove/Install 3-48
- Tow/Park Helicopter 1-82
- Tracking and Balancing, Main Rotor 5-302
- Tracking and Dynamic Balancing, Main Rotor 5-303
- Transducer
  - Clean, Inspect and Repair 11-59
- Transducer, Air Data
  - Clean, Inspect, and Repair 8-67
  - Install 8-68
  - Remove 8-66
- Transducer, Collective 11-57
- Transducer, Oil Pressure
  - Clean, Inspect, and Repair 6-351
  - Remove/Install 6-349
- Transducer, Temperature, Remove/Install 6-70
- Transducer, Torque, Remove/Install 6-116
- Transducer Bellcrank Bearing (AVIM)
  - Remove/Install 11-421
- Transducer Bellcrank Support Bushing (AVIM)
  - Remove/Install 11-423
- Transformer (LVDT), TAMS Linear Variable Differential
  - Clean, Inspect, and Repair 9-468
  - Remove/Install 9-470
- Transformer in Forward Overhead Console (Typical), Remove/Install 9-319
- Transformer-Rectifier Unit (TRU)
  - Clean, Inspect, and Repair 9-181
  - Operational Check 9-114
  - Remove/Install 9-183
- Transformer-Rectifier Unit Does Not Come On K-230
- Transformer-Rectifier Unit is On But No 24-30 VDC Indication Above K-234
- Transformer-Rectifier Unit On (No Percent Load Display on MPD) K-237

SUBJECT PAGE

T (Cont)

- Transmission
  - Build Up 6-40
  - Clean, Inspect, and Repair 6-29
  - Install 6-53
  - Preserve and Package 6-49
  - Remove 6-31
- Transmission, Main, Serviceability Check of 6-3
- Transmission Attitude Measurement Subsystem (TAMS) Bit J-11
- Transmission Attitude Measurement System — Operational Check 9-123
- Transmission Boot Assembly, Lower
  - Remove/Install, Clean, and Inspect 6-38
- Transmission, Oil and Filter
  - Drain/Service 1-53
- Transmission Oil Caution Message on MFD and TRANS OIL °C x 10 (MPD) Reads Above Limit K-726
- Transmission Oil Filters
  - Remove/Install 6-321
- Transmission Oil Jets (Number One and Two)
  - Clean, Inspect, and Repair 6-344
  - Remove/Install 6-341
- Transmission Oil Pressure on TRANS OIL PSI x 10 (MPD) Reads Low and Transmission OIL PRESS Caution Message Appears on MFD K-2
- Transmission Oil Pump
  - Clean, Inspect, and Repair 6-320
  - Remove/Install 6-317
- Transmission Sump Chip Detector Fuzz Burner Failure-Special Test Tool LED Does Not Flash When Test Switch is Set to ON K-326
- Transverse Beam, Aft
  - Clean, Inspect, and Repair 2-314
- Transverse Beam, Forward
  - Clean, Inspect, and Repair 2-312
- Treatment — Searchlight, Corrosion 9-287
- Trim Switch, SCAS Force
  - Remove/Install 9-347
- Troubleshooting K-1
  - Drive Train System K-1
  - Electrical System K-57
  - Fuel System 10-2
- Trunnion Bearing
  - Clean, Inspect, and Repair 7-95

SUBJECT PAGE

T (Cont)

Trunnion Bearing Assembly
  Clean, Inspect, and Repair ... 11-54
  Remove/Install ... 11-51
Trunnion Bearing, Servo
  Remove/Install ... 7-93
Tube Assembly (Typical), Rigid
  Remove/Install ... 7-23
Tube Assembly, Breather
  Remove/Install ... 6-68
Tube Assembly, Skid
  Clean, Inspect, and Repair ... 3-12
  Remove/Install ... 3-14
Tubing and Fittings, Pitot-Static
  Clean, Inspect, and Repair ... 8-62
  Install ... 8-75
  Remove ... 8-70

U

Unfold/Fold Main Rotor Blades ... 1-74
Unit, AC External Power Control
  Clean, Inspect, and Repair ... 9-261
  Remove/Install ... 9-263
Unit, Alternator Control
  Clean, Inspect, and Repair ... 9-253
  Remove/Install ... 9-255
Unit and Chain (TAMS), Signal Conditioning
  Clean, Inspect, and Repair ... 10-88
Unit, Freewheeling, Serviceability
  Check of ... 6-8
Unit, Fuel Quantity Control
  Remove/Install ... 9-436
Unit (Mast Torque), Signal Conditioning
  Clean, Inspect, and Repair ... 9-459
  Install ... 9-462
  Remove ... 9-461
Unit (TAMS), Signal Conditioning
  Install ... 9-466
  Remove ... 9-465
Upper Anticollision Light Does Not
  Flash ... 9-660
Upper Chip Detector, Remove/Install ... 6-82
Upper Wire Cutter
  Clean, Inspect, and Repair ... 2-86
  Remove/Install ... 2-75

SUBJECT PAGE

U (Cont)

Use of Adhesive Heat Resistant and
  Structural Bonding (AVIM) ... 2-106
Use of Aliphatic Polyurethane Top Coatings ... 2-102
Use of Chemical Conversion Coating
  for Aluminum ... 2-108
Use of Copper Filled Polyurethane
  Conductive Coatings ... 2-99
Use of Flame Spray Coating (AVIM) ... 2-110
Use of Heat Resistant and Structural
  Bonding Adhesive ... 2-106
Use of the Maintenance Allocation Chart ... B-2
Utility Light
  Install ... 9-291
  Operational Check ... 9-153
  Remove ... 9-290
Utility Light Brightness Cannot Be Controlled
  With Rheostat At Rear of Lamp ... K-482
Utility Light Does Not Come On When
  Momentary Switch On Back of Light
  is Pressed ... K-480
Utility Light Will Not Focus From Spot
  to Flood When Turning Front of
  Light Assembly ... K-483
Utility Systems ... 1-30, 12-1

V

Valve Assembly, Bypass Oil Filter
  Clean, Inspect, and Repair ... 6-339
  Remove/Install ... 6-337
Valve, Defuel
  Clean, Inspect, and Repair ... 10-48
  Remove/Install ... 10-46
Valve, Fuel Shutoff (AVIM)
  Clean, Inspect, and Repair ... 10-15
Valve, Fuel Shutoff
  Remove/Install ... 10-12
Valve, Hydraulic Solenoid
  Clean, Inspect, and Repair ... 7-51
  Remove/Install ... 7-47
Valve, Mixing
  Assemble ... 13-7
  Clean, Inspect, and Repair ... 13-5
  Disassemble ... 13-3
  Install ... 13-9
  Remove ... 13-2

SUBJECT PAGE

V (Cont)

Valve, Oil Drain
  Clean, Inspect, and Repair 6-355
  Remove/Install.......................... 6-353
Valve, Regulator, Oil Pressure
  Adjust 6-333
  Clean, Inspect, and Repair 6-335
  Remove/Install.......................... 6-332
Valve, Relief, Remove/Install................. 7-44
Valve, Sump
  Clean, Inspect, and Repair 10-52
  Remove/Install.......................... 10-50
Variable Differential Transformer (LVDT), TAMS Linear
  Clean, Inspect, and Repair 9-468
  Remove/Install.......................... 9-470
Vent Control Cable
  Clean, Inspect, and Repair 13-28
  Remove/Install.......................... 13-36
Vent, Fuel Cell Hose, Remove/Install 10-28
Ventilating System 13-30
Ventilation and Heating System Ducts
  Clean, Inspect, and Repair 13-18
  Remove/Install.......................... 13-21
Vertical Fin Bumper and Pin
  Remove/Install.......................... 2-258
Vertical Scale Instrument Test Pattern Incorrect During MFD DISPLAY CHECK K-239
Vibration, High Frequency.................... K-9
Vibration in Tail Rotor Driveshaft K-12
Voids, Fin Skin, Repair.................... 2-260
Voltage Regulator Control Knob Does Not Change BATT V Indication on MPD K-242
Voltage Regulator
  Clean, Inspect, and Repair 9-229
  Remove/Install.......................... 9-231

W

Warning Message ENGINE OUT Remains On (Helicopter Stabilized at Flight Idle DC Generator ON)........................ K-407
Warning Message HIGH RPM Does Not Come On, or It Comes On at Wrong RPM K-355
Warning Message HIGH RPM Does Not Go Out When Rotor RPM is Reduced to 100% K-356

SUBJECT PAGE

W (Cont)

Warning Message LOW RPM Does Not Come On When Rotor RPM is Reduced to 97% or it Comes on at Other RPM.............. K-357
Warning Message LOW RPM Does Not Go Out With Helicopter at 100 %RPM......... K-354
Warranty Information 1-3
Weighing
  Instructions G-14
  Preliminary Instructions................... G-14
  Record, Form DD 365B G-6
Weight and Balance G-1
Weight and Balance Clearance Form F, DD Form 365F G-11
Weight and Balance Data G-1
  Responsibility G-1
  Scope G-1
  Weight Definition G-1
Weight/Balance and Load Data G-2
Weight, Definition G-1
Weight-On-Gear Switch
  Remove/Install.......................... 9-448
White Floodlight Does Not Come On When FLOOD LT Switch is Set to WHT K-479
Winches, and Hoist........................ 14-1
Window in Access Door, Remove/Install 2-9
Window, Lower
  Clean, Inspect, and Repair 2-127
  Remove/Install.......................... 2-124
Windshield Assembly
  Clean, Inspect, and Repair 2-119
  Remove/Install.......................... 2-115
Wire Cutter, Lower
  Clean, Inspect, and Repair 2-73
  Remove/Install.......................... 2-71
Wire Cutter, Upper
  Clean, Inspect, and Repair 2-86
  Remove/Install.......................... 2-75
Wire Repair and Replacement F-52
Wiring Data F-2
Wiring Diagram Index, Foldout F-56
Wiring Diagrams F-1
  Abbreviation F-2
  Description — Equipment List F-7
  Equipment List F-7
  Foldout Wiring Diagram Index F-56
  Symbols F-2
  Wire Repair and Replacement F-52
  Wiring Data F-2
  Wiring Identifications F-2
Work Times, Maintenance Categories and..... B-5

SUBJECT PAGE

X

Y

Yaw Engage Switch, SCAS
  Remove/Install 9-344

SUBJECT PAGE

Y (Cont)

Yaw Cnly Will not Engage K-709
Yoke Buffers (AVIM), Remove/Install 5-96
Yoke Bumpers (AVIM), Remove/Install 5-99
Yoke Main Rotor Hub
  Clean, Inspect, and Repair 5-101

Z

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

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6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 Cylinders. The engine on my set only has 4 Cylinders. Change the manual to show 4 Cylinders.
81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket bit it doesn't fit. Supply says I got What I ordered, so the NSN is Wrong. Please give me a good NSN

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BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M Overprint 2, 1 Nov 80.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2,
1 Nov 80

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C